

# Bank of Japan Monetary Intermediation Cost

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## ABSTRACT

*The Bank of Japan (BOJ) controls the monetary system of Japan based on a fractional reserve deposit banking system. This paper analyzes the BOJ and determines its monetary intermediation cost is on the order of 4¼% of GDP per year and is 98.7% inefficient (1 - reserve requirement). The fractional reserve system has been confounded with credit intermediation and results in unearned wealth transfer to the fractional reserve-lending source from first use of new money creation. 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.*

*The paper shows that there would be no credit intermediation loss from conversion to a full reserve system and concludes that the improvement to the Japanese economy from conversion to a full reserve system would be the amount of the BOJ's reduced monetary intermediation cost, on the order of 4¼% of GDP per year, improve the balance sheet of Japan on the order of ¥1,091.3 trillion as of fiscal year 2016 and restore on the order of eight million jobs.*

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To the people of Japan

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## **1. Introduction**

The introduction reviews the inefficiency, operating leverage risk and cost of the Bank of Japan'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 Bank of Japan (BOJ) controls the monetary system of Japan based on a fractional reserve deposit banking system. This paper analyzes the BOJ and determines its monetary intermediation cost is on the order of 4¼% of GDP per year<sup>1</sup> and is at least 98.7%<sup>2</sup> inefficient (1 - reserve requirement). 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 (M&M) Financial Theorem<sup>3</sup>. The Japanese 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 Japanese people. As will be shown in Section 3 there is no credit intermediation loss with a full reserve system and it is believed that with the discovery of the M&M 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 Japanese economy from conversion is expected to be the amount of the reduced monetary intermediation cost, on the order of 4¼% of GDP per year<sup>4</sup>, improve the balance sheet of Japanese government on the order of ¥1,091.3 trillion<sup>5</sup> as of fiscal year 2016 and restore on the order of seven to eight million or more jobs<sup>5</sup>.

### *A. Inefficiency of Bank of Japan Reserve Fractional Reserve Monetary System*

<b>I. Intermediation Cost using Current Bank of Japan Monetary System</b>		
<b>Bank of Japan Monetary Issuance System</b>	<b>\$ Amount</b>	<b>Efficiency of Monetary Increase</b>
1. Bank of Japan acquires government issued debt	¥1,000,000	1.3%
2. Bank of Japan Reserve Requirement (est.) <sup>1</sup>	1.3%	
3. Money Supply Increase via Bank of Japan Loans	¥76,923,077	100.0%
4. Bank of Japan's net Increased Loans (Intermediation Cost)	¥75,923,077	98.7%

TABLE 1 DATA SOURCE: Bank of Japan Monetary Intermediation Cost Inefficiency Estimate, Attachment 1.

<b>II. Direct Monetary Expansion System to People using Government Entity</b>		
<b>Direct Monetary Issuance System</b> (Possible Ministry Economy, Trade&In	<b>\$ Amount</b>	<b>Efficiency of Monetary Increase</b>
1. People issued bills directly from government (METI)	¥1,000,000	100.0%
2. Japanese people portion of issued bills	100.0%	
3. Money stock increase to people via direct government issue	¥1,000,000	100.0%
4. Bank of Japan's net increased loans (Intermediation Cost)	¥0	0.0%

TABLE 2 DATA SOURCE: Bank of Japan Monetary Intermediation Cost Inefficiency Estimate, Attachment 1.

<sup>1</sup> Bank of Japan Compounded Monetary Intermediation Cost since 1995 to 2016, Attachment 5.

<sup>2</sup> Bank of Japan Monetary Intermediation Cost Inefficiency Estimate, Attachment 1.

<sup>3</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. References 17 and 18.

<sup>4</sup> Bank of Japan Compounded Monetary Intermediation Cost 1995 to 2016, Attachment 5.

<sup>5</sup> Bank of Japan Monetary Intermediation Cost Impact on Economy and Jobs, Attachment 9.

*A.1. Bank of Japan (BOJ) Estimated Annual Monetary Intermediation Cost Formula*

(1)  $BOJ \text{ Monetary Intermediation Cost}_N = [(MS_N - MS_{N-1}) \times (1 - RR) + BOJ \text{ net operating cost}_N] / [GDP_N]$

Where

GDP = Gross Domestic Product (¥)

I = Interest Rate (%)

MS = Money Stock, used M1 (¥)

N = Year

RR = Reserve Requirement (%)

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

The charts 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, traditionally called "risk" in finance. The compounding intermediation cost of the Bank of Japan's monetary debt is shown gradually increasing in size that is actually a reduction to system returns.

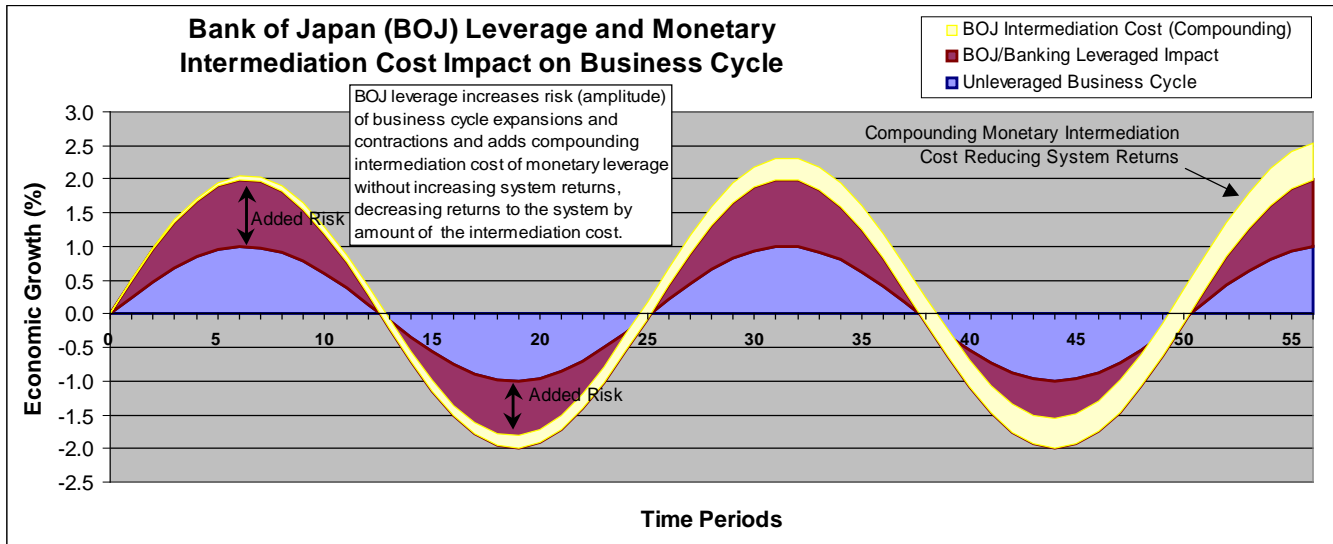


CHART I: Business Cycle with Leverage and Intermediation Added using Excel Sine Wave Graph.

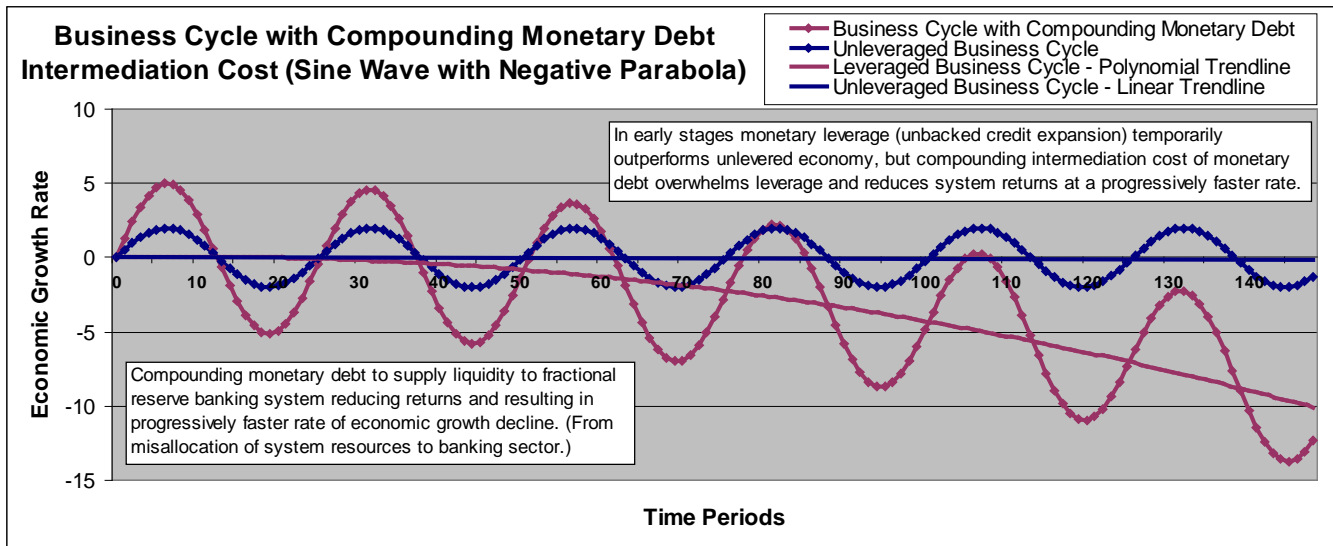


CHART II: Business cycle with compounding monetary intermediation cost. Chart shows the impact of the compounding monetary debt intermediation cost, which mis-allocates system resources to the money creation source and reduces economic growth at a progressively faster rate as the monetary debt compounds.

C. Bank of Japan Monetary Intermediation Cost to the Economic System

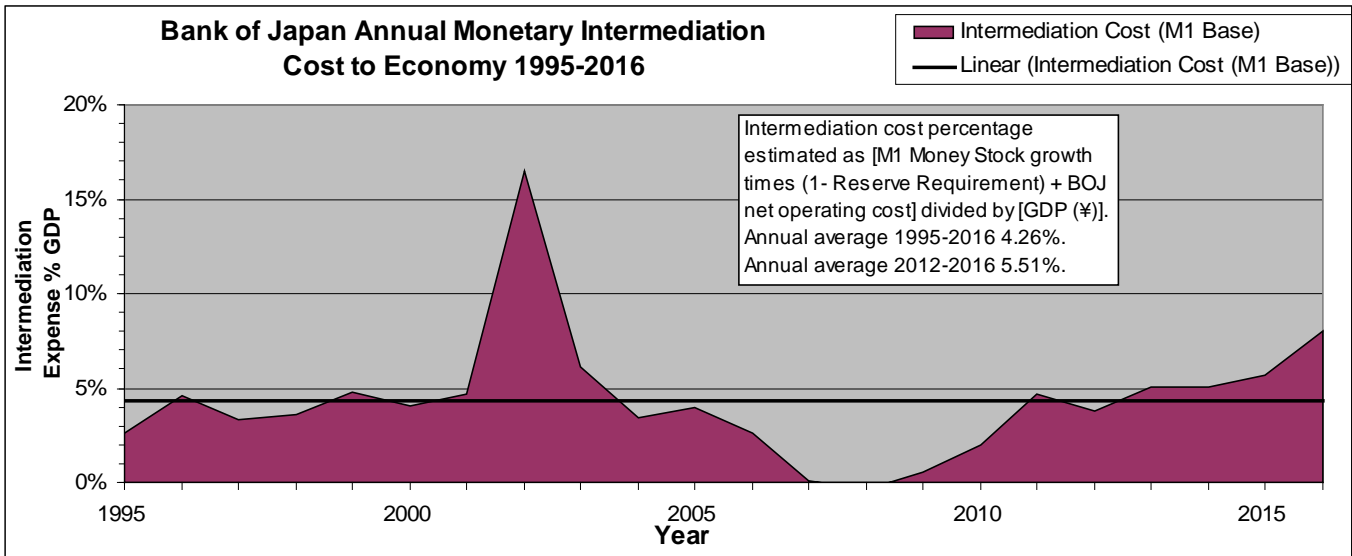


CHART III DATA SOURCE: BOJ Annual Monetary Intermediation Cost 1995 to 2016 using M1 Money Stock, Attachment 4.

<b>BOJ Monetary Intermediation Cost 1995-2016</b>	<b>¥ Billions</b>	<b>% Percent</b>
Economic (GDP) earnings 2016 w/o BOJ intermedation expense	¥539,254.3	100.0%
Economy earnings with BOJ Intermedation expense deducted	¥207,377.3	38.5%
<b>BOJ Intermedation Expense to Non Bank Economy since 1995</b>	<b>¥331,877.0</b>	<b>61.5%</b>

Bank of Japan Intermedation costs, primarily monetary expansion inflation, estimated to have wealth transferred approximately 61.5% of economic system returns to banking sector from 1995 to 2016.

TABLE 3 DATA SOURCE: BOJ Compounded Monetary Intermediation Cost 1995 to 2016, Attachment 5.

D. Full Reserve System Alternative with Historical Support

A monetary system 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>6</sup>, 1918; Paul Howard Douglas, 1947; Frank H. Knight, 1950; Milton Friedman, 1967 and James Tobin, 1971; two past presidents of the American Finance Association; Garfield Cox, 1954 and Merton Miller, 1976; a former Vice President (1941-45), Secretary of Agriculture (1933-40) and Secretary of Commerce (1945-46) of the United States, Henry Wallace, the original Senate sponsor of the Federal Reserve Act of 1913, Robert L. Owen, at least one former prominent member of the federal reserve system, Lauchlin Currie, famous inventor Thomas Edison and numerous distinguished economists and financial writers listed in Attachment 11.

<sup>6</sup> Allen, William R., "Irving Fisher and the 100 Percent Reserve Proposal", *Journal of Law and Economics* vol. XXXVI (October 1993), Reference 1.

## 2. New Money Creation Monetary Intermediation Cost Issue

When the Bank of Japan (BOJ) creates new money there is a general belief that it is made out of "nothing" or "thin air", this is not true, it comes out of the existing wealth stock. 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 BOJ indicating a transfer of wealth to the BOJ every time new money is created.

The Japanese economic system is constantly losing and transferring wealth to the BOJ to sustain its money creation process, not "thin air" or the government as is widely believed. In this process not only does the BOJ 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. BOJ 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 (%)

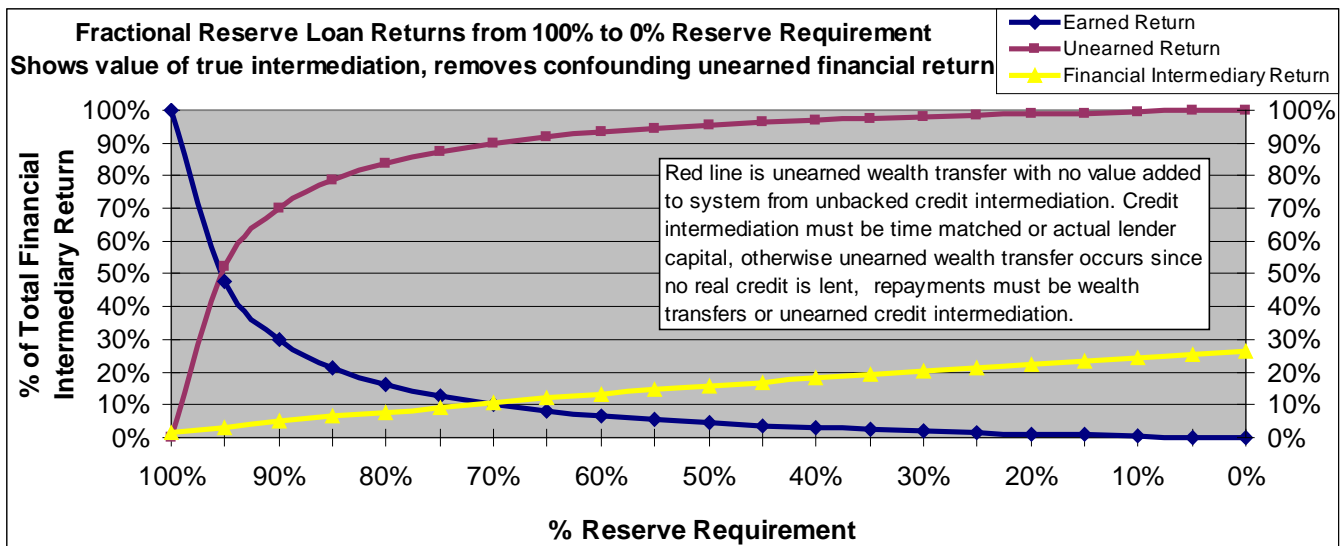


CHART IV DATA SOURCE: Fractional Reserve Loan Analysis Table, Attachment 2(c).

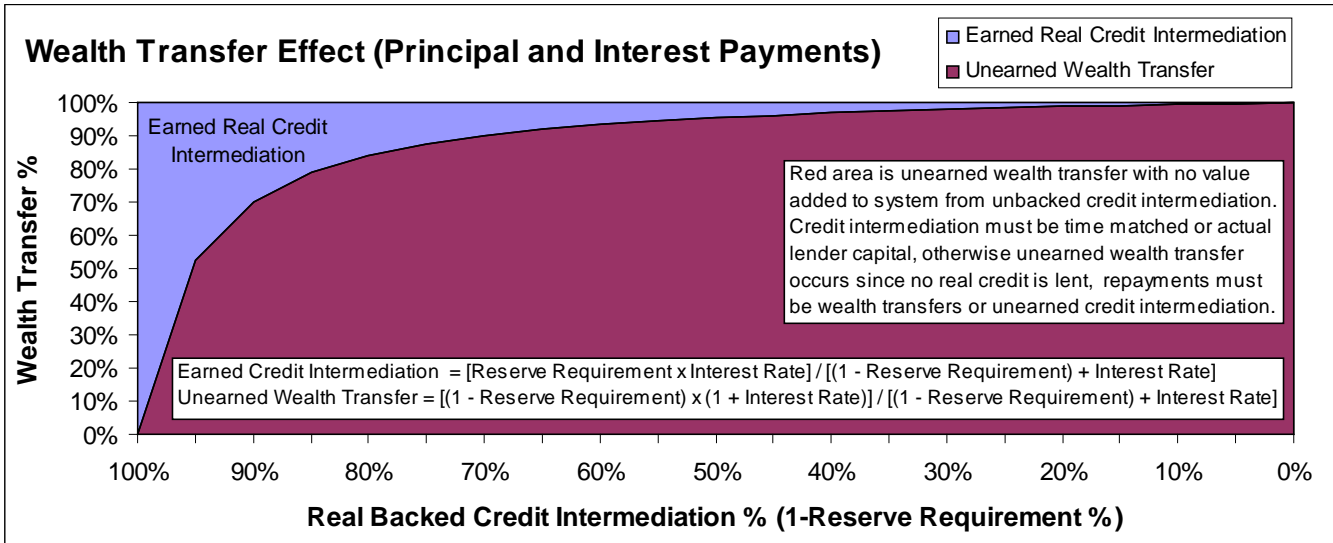


CHART V DATA SOURCE: Fractional Reserve Loan Analysis Table, Attachment 2(c).

The Bank of Japan utilizing a 1.3% reserve requirement<sup>7</sup> is a 98.7% (1 - applicable reserve requirement) beneficiary of money stock increases by virtue of its first use of the new money created. BOJ 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 4¼% of GDP per year<sup>8</sup>.

<sup>7</sup> Reserve Requirement for Bank of Japan Member Banks is 1.3% over ¥1.2 Trillion Yen, Reference 3.

<sup>8</sup> Bank of Japan Compounded Monetary Intermediation Cost 1995 to 2016, Attachment 5.



### **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 (as shown in Section 2) 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 98.7%+ inflationary wealth transfer from creation and first use of the new money. 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 lending, real asset lending, with the fractional reserve system of lending unbacked credit, effectively nothing. The only thing happening is wealth transfer via inflation 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 was added to the system, but it is small on a relative basis at approximately 1.3% (1 – 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 1.3% reserve system, 98.7% of the initial loan is inflationary new money creation wealth transfer with interest repayment as 98.7% 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 a Farmer with a field that a crop is grown on, a Manufacturer with a Tractor that is rented to the Farmer and a Financial Intermediary that can lend the Farmer the amount of the tractor rent.

**Initial Conditions**

Item	Value (Initial Condition)
Crop Value	¥ 150,000
Tractor Rent (Manufacturer)	¥ 50,000
Loan, if applicable	¥ 50,000
Loan Interest to Rent Tractor (5%)	¥ 2,500

*A. Direct Lending (100% Full Reserve Lending - Manufacturer is Lender of Real Credit - Tractor)*

<b>I. No Financial Intermediary (Real Asset Tractor Lending)</b>				
	Farmer	Manufacturer	Intermediary	Total
Start (Cash)	¥49,675	¥49,675	¥650	¥100,000
Tractor Rent	-¥50,000	¥50,000		¥0
Sell Crop	¥150,000			¥150,000
End (Cash)	¥149,675	¥99,675	¥650	¥250,000
Direct Net Earnings	¥100,000	¥50,000	¥0	¥150,000
% Earnings	66.67%	33.33%	0.00%	100.00%

TABLE 4 DATA SOURCE: Fractional Reserve Analysis with 1.3% Reserve Requirement, Attachment 3(a).

*B. Fractional Reserve Lending (1.3% Reserve Requirement Financial Intermediation)*

<b>II. With 1.3% Reserve Financial Intermediation Added ( 1.3% Real Backing)</b>				
	Farmer	Manufacturer	Intermediary	Total
Start (Cash)	¥49,675	¥49,675	¥650	¥100,000
Direct Net Earnings(Above)	¥100,000	¥50,000	¥0	¥150,000
Loan	¥50,000		¥50,000	¥50,000
Loan Interest	-¥2,500		¥2,500	¥0
Pay Back Loan	-¥50,000		¥50,000	¥0
End (Cash)	¥147,175	¥99,675	¥52,500	¥299,350
Net Earnings	¥97,500	¥50,000	¥51,850	¥199,350
% Earnings	48.91%	25.08%	26.01%	100.00%
Wealth Transfer=(Principal+Interest) x (1- RR). Inflation is Principal portion wealth transfer				19.74%
Inflation Cash (¥) [Principal Wealth Transfer] = Total Cash (¥) End - Total Cash (¥) Begin				¥49,350

TABLE 5 DATA SOURCE: Fractional Reserve Analysis with 1.3% Reserve Requirement, Attachment 3(a).

<b>1.3% Fractional Reserve Requirement Financial Intermediation/Wealth Transfer Impact</b>						
	(A)=(a) x (1-RR)	(B)= Item x (1-RR)	= (1 - RR)	(C)=Item x RR	(D) = (B) + (C)	
Item	Item \$ Amount	Inflation	¥ Unearned	% Unearned	¥ Earned	Total Return
Loan Principal (a)	¥50,000	¥49,350	¥49,350	98.70%		¥49,350
Interest (Loan(a) x (c))	¥2,500		¥2,468	98.70%	¥33	¥2,500
Total	¥52,500	¥49,350	¥51,818	98.70%	¥33	¥51,850
<b>Wealth Transfer (Unearned Return = Σ(B))</b>						¥51,818
<b>Financial Intermediation Unearned Return % (Unearned Return/Total Return = Σ(B)/Σ(D))</b>						99.94%
<b>Intermediary Return on ¥650 Required Reserve Investment (Total Return/Start Cash)</b>						7976.92%
<b>Earned Financial Intermediation (Interest x Reserve Requirement = Σ(C))</b>						¥33
<b>Earned Financial Intermediation % of Total Return of ¥51850 (Earned Return/Total Return)</b>						0.06%

TABLE 6 DATA SOURCE: Fractional Reserve Analysis with 1.3% Reserve Requirement, Attachment 3(a).

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

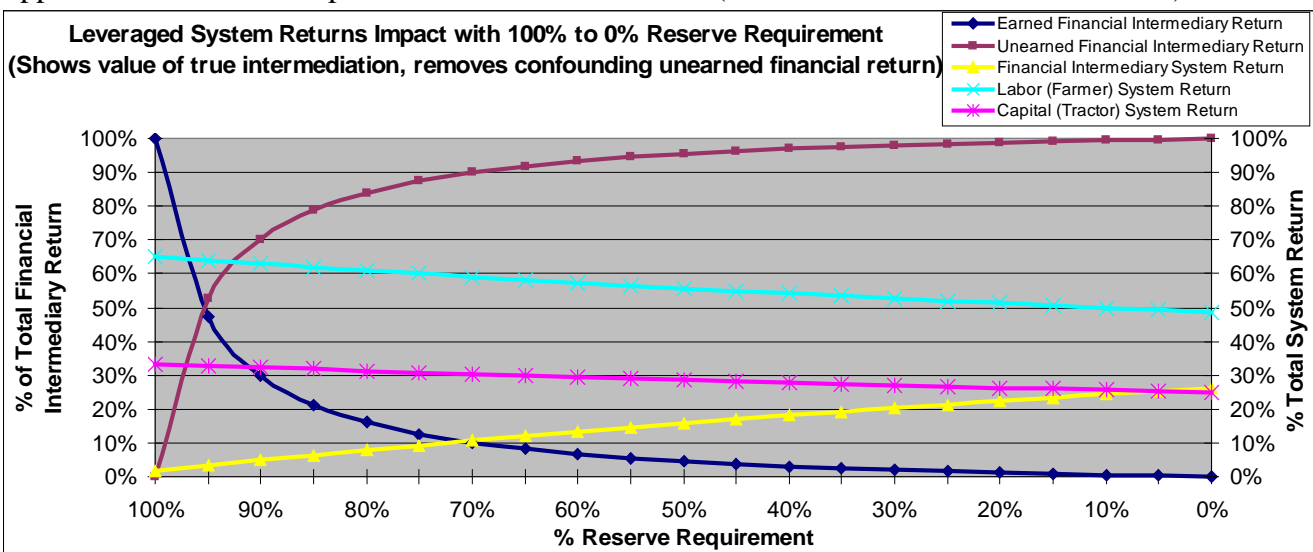
II. With 100% Reserve Financial Intermediation Added ( 100% Real Backing)				
	Farmer	Manufacturer	Intermediary	Total
Start (Cash)	¥25,000	¥25,000	¥50,000	¥100,000
Direct Net Earnings(Above)	¥100,000	¥50,000	¥0	¥150,000
Loan	¥50,000		¥50,000	¥50,000
Loan Interest	-¥2,500		¥2,500	¥0
Pay Back Loan	-¥50,000		¥50,000	¥0
End (Cash)	¥122,500	¥75,000	¥52,500	¥250,000
Net Earnings	¥97,500	¥50,000	¥2,500	¥150,000
% Earnings	65.00%	33.33%	1.67%	100.00%
Wealth Transfer=(Principal+Interest) x (1- RR). Inflation is Principal portion wealth transfer				0.00%
Inflation Cash (¥) [Principal Wealth Transfer] = Total Cash (¥) End - Total Cash (¥) Begin				¥0

TABLE 7 DATA SOURCE: Fractional Reserve Analysis with 100% Reserve Requirement, Attachment 3(b).

100% Fractional Reserve Requirement Financial Intermediation/Wealth Transfer Impact						
Item	Item \$ Amount	Inflation	¥ Unearned	% Unearned	¥ Earned	Total Return
Loan Principal (a)	¥50,000	¥0	¥0	0.00%		¥0
Interest (Loan(a) x (c))	¥2,500		¥0	0.00%	¥2,500	¥2,500
Total	¥52,500	¥0	¥0	0.00%	¥2,500	¥2,500
<b>Wealth Transfer (Unearned Return = Σ(B))</b>						¥0
<b>Financial Intermediation Unearned Return % (Unearned Return/Total Return = Σ(B)/Σ(D))</b>						0.00%
<b>Intermediary Return on ¥50000 Required Reserve Investment (Total Return/Start Cash)</b>						5.00%
<b>Earned Financial Intermediation (Interest x Reserve Requirement = Σ(C))</b>						¥2,500
<b>Earned Financial Intermediation % of Total Return of ¥2500 (Earned Return/Total Return)</b>						100.00%

TABLE 8 DATA SOURCE: Fractional Reserve Analysis with 100% Reserve Requirement, Attachment 3(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 additional profit must be wealth transfer (Shown below in Charts VI and VII).



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 (Firm) value.

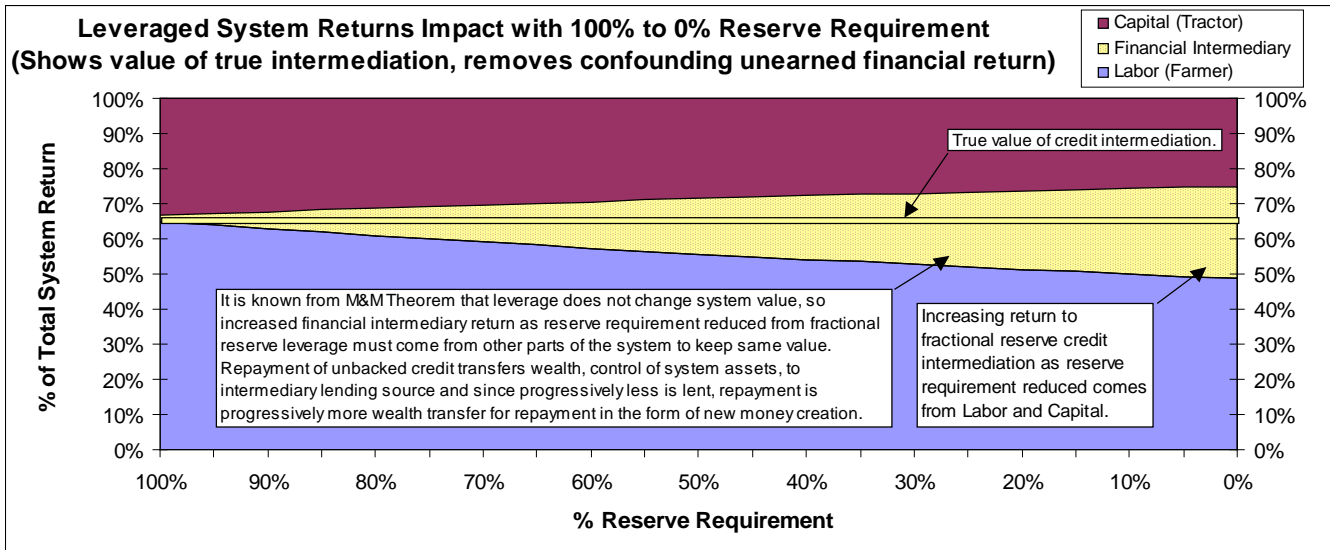


Chart VII DATA SOURCE: Chart data from example loan tables, attachment 2(c), using 100% to 0% reserve requirement. Increasing return to fractional reserve credit intermediation in the form of new money creation as reserve requirement reduced comes from Capital (Tractor Rent) and Labor (Farmer) since it is known from M&M Theorem that leverage does not change system (Firm) 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)
- C (Capital) = Tractor Rent (¥) (Manufacturer)
- L = Loan Amount (¥) (Intermediary)
- I = Loan Interest Rate (%)
- RR = Reserve Requirement (%)

Putting "CSP" and "C" in terms of "L" (Loan expanding the money stock) so that  $CSP = aL$  and  $C = bL$  where  $a = CSP/L$  (% Labor) and  $b = C/L$  (% Capital) 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. How to measure Bank of Japan monetary intermediation cost impact on economy & jobs

Restoring the monetary intermediation cost of the BOJ back to the economy is expected to improve Japanese economic performance by the amount of the reduced intermediation cost, on the order of 4¼% of GDP per year<sup>9</sup> from the improved efficiency of the monetary system.

The Bank of Japan Monetary System has a 98.7% (1 - Reserve Requirement<sup>10</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 an eighty million-yen of capital value per job creation, the average ¥874.0 trillion capitalized cost represents an estimated 7,800,000 private sector jobs. Per NY Times estimate the ¥34.96 trillion annual cost would be approximately 10,065,000 jobs. These estimates indicate the approximate cost of BOJ intermediation is on the order of eight to nine million or more jobs.

I. Historical Average (2007-2016, 10-years)		(¥ Billions)
1. BOJ Operations (Ave Last 10 Years (2007-2016)) <sup>1</sup>		¥509.2
2. New Money (M1) Issued times ( 1 - reserve requirement) <sup>1,a</sup>		¥17,433.6
	Total Annual Intermediation	¥17,942.8
	Intermediation Capitalized <sup>2,c</sup>	¥448,569.1

II. Fiscal 2016 Actual		(¥ Billions)
1. BOJ Operations (Fiscal 2016 Actual Net) <sup>1</sup>		¥497.3
2. New Money (M1) Issued times ( 1 - reserve requirement) <sup>1,a</sup>		¥42,792.7
	Total Annual Intermediation	¥43,289.9
	Intermediation Capitalized <sup>2,c</sup>	¥1,082,248.6

III. Monetary Debt Impact <sup>1,2,3 Notes</sup>		(¥ Billions)
Bank note to Gov't to cover fractional reserve deposit cash shortage <sup>3,b</sup>		¥593,642.0
Commercial Bank Federal Gov.t Securities Holdings Retired <sup>3</sup>		¥79,991.7
Bank of Japan Gov't Securities Holdings Retired <sup>3</sup>		¥417,711.5
	Intermediation Capitalized	¥1,091,345.2

TABLE 9 DATA SOURCE: Bank of Japan Monetary Intermediation Cost Impact on Economy and Jobs. Attachment 9.

Bank of Japan Monetary Intermediation Cost Economic Impact Estimates								
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
Estimation Basis	Intermediation Cost		Jobs Impact Estimates			Unemployment	GDP %	Federal Debt
	Annual	Capitalized	Annual	Capitalized	Average	Reduction %	Improvement	Reduction %
	(¥ Billions)	(¥ Billions)	=(A)/NYT Est <sup>8</sup>	=(B)/¥111,434,385 (d)	=(C)+(D)/2	=(E)/[Unemployment]	=(A) / [GDP]	=(B)/[Fed Debt]
I. Last 10 Ave ('07-'16)	¥17,942.8	¥448,569.1	5,165,915	4,025,410	4,595,663	244.5%	3.3%	
II. Fiscal 2016 Actual	¥43,289.9	¥1,082,248.6	12,463,642	9,711,981	11,087,811	589.8%	8.0%	
III. Monetary Debt Est.	¥43,653.8	¥1,091,345.2	12,568,401	9,793,613	11,181,007	594.7%	8.1%	101.8%
<b>Averages</b>	<b>¥34,962.2</b>	<b>¥874,054.3</b>	<b>10,065,986</b>	<b>7,843,668</b>	<b>8,954,827</b>	<b>476.3%</b>	<b>6.5%</b>	<b>101.8%</b>

TABLE 10 DATA SOURCE: Bank of Japan Monetary Intermediation Cost Impact on Economy and Jobs, Attachment 9.

<sup>9</sup> Bank of Japan Compounded Monetary Intermediation Cost 1995 to 2016, Attachment 5.

<sup>10</sup> Reserve Requirement for Bank of Japan Member Banks is 1.3% over ¥1.2 Trillion Yen, Reference 3.

## **5. Inability of BOJ policy makers to forecast better than markets or GDP Index**

The Bank of Japan 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 Bank of Japan is estimated to be on the order of 4¼% of GDP per year<sup>11</sup>, primarily through bank creation and first use of new money instead of a direct issue system to the people. It is not believed BOJ monetary policy management is adding any value to the economy according to the M&M Theorem of capital structure irrelevance so the monetary intermediation cost of the BOJ must be approximately a 98.7% (1 - applicable reserve requirement (RR)) or more exactly formula (1)  $[(1 - RR) \times (1 + I)] / [(1 - RR) + I]$  with I = Interest rate) reduction of returns and transfer of wealth to the BOJ 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 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 4¼% of GDP per year from the improved efficiency of the monetary system.

Jack Bogle, who has written extensively on financial intermediation, has developed a Cost Matters Hypothesis (CMH) that is material to Japanese monetary policy:

*“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>12</sup>

<b>Monetary Intermediation Cost Bank of Japan (Est. using M1)</b>			
<b>Year</b> (End 12/31)	<b>GDP</b> (% Growth)	<b>Intermediation</b> (% GDP Cost)	<b>GDP-Intermediation</b> Net (% GDP) ( $r_f$ )
1994			
1995	2.740%	2.589%	0.151%
1996	2.393%	4.595%	-2.202%
1997	0.865%	3.293%	-2.428%
1998	-1.373%	3.559%	-4.933%
1999	-0.765%	4.793%	-5.558%
2000	1.250%	4.067%	-2.817%
2001	-1.786%	4.663%	-6.449%
2002	-0.830%	16.479%	-17.309%
2003	0.615%	6.116%	-5.501%
2004	0.627%	3.431%	-2.804%
2005	0.866%	3.961%	-3.095%
2006	0.644%	2.636%	-1.993%
2007	0.363%	0.096%	0.267%
2008	-4.055%	-0.321%	-3.733%
2009	-3.414%	0.582%	-3.996%
2010	1.465%	2.018%	-0.553%
2011	-1.054%	4.728%	-5.783%
2012	0.093%	3.789%	-3.696%
2013	2.582%	5.048%	-2.466%
2014	2.212%	5.071%	-2.859%
2015	2.977%	5.681%	-2.704%
2016	1.002%	8.028%	-7.026%
<b>AVERAGES</b>	<b>0.32%</b>	<b>4.26%</b>	<b>-4.04%</b>
Count(Years)	22	22	22

TABLE 11 DATA SOURCE: BOJ Annual Monetary Intermediation Cost 1995 to 2016 using M1 Money Stock, Attachment 4.

<sup>11</sup> Bank of Japan Compounded Monetary Intermediation Cost 1995 to 2016, Attachment 5.

<sup>12</sup> Bogle, John C., "Don't Count on It!", 2010, Chapter 2 The Relentless Rules of Humble Arithmetic, page 26.

## **6. Optimal Quantity of Money and GDP Standard for Go Forward 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 and which would be direct deposited on a pro rata basis in depositor accounts at non-lending 100% depositor owned depositories proposed in section 8. A GDP growth standard would also provide a revenue source, the risk free rate of return or interest rate ( $r_f$ ), to fund the operating expenses of the non-lending depositories proposed in section 8.

#### *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 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, and in fact not taking on market risk would be expected to lower overall returns. The only expected additional return would be from taking on business risk such as employment. There is no expected or added return for taking on leverage risk and in fact overall system returns are reduced by the amount of the intermediation cost of adding the leverage to the system.

A sample of how the system would have operated for the last ten years along with a comparison showing actual M1 (Currency in Circulation Plus Demand Deposits) Money Stock growth is included in the two charts below. M1 was selected for this example; any actual system would have to have a 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 for M1.

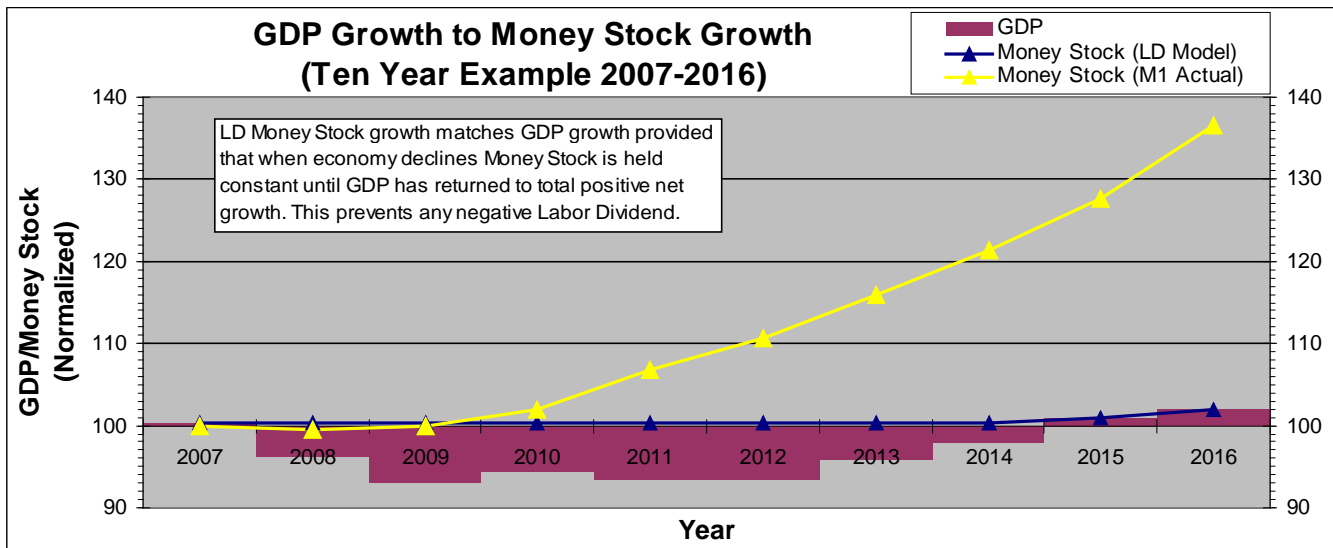


CHART VIII DATA SOURCE: Direct Issuance and First Use (Seigniorage) Money Supply, Attachment 10.

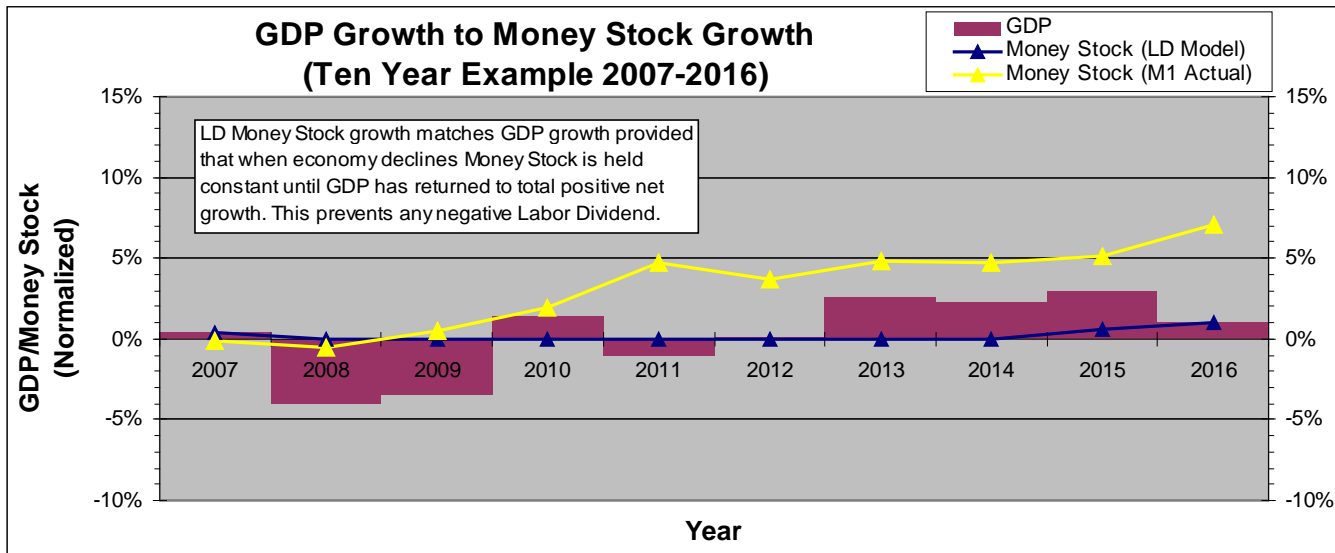


CHART IX DATA SOURCE: Direct Issuance and First Use (Seigniorage) Money Supply, Attachment 10.

Direct issue would be at least a 98.7%<sup>13</sup> improvement in the intermediation process of adding money to the system and should save on the order of 4¼% 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  $r_f$  [GDP-Intermediation] that hides the economy's contracting GDP from first use new money creation wealth transfer to the banking sector.

Year	Monetary Intermediation Cost Bank of Japan (% Est.)				Comparison Analysis	
	GDP <sup>3</sup> (% Growth)	Intermediation (% GDP Cost)	Inflation % CPI-U (EOY)	GDP-Intermediation Net (% GDP) ( $r_f$ )	GDP-Inflation Net (% GDP)	Real $r_f$ GDP - Nominal GDP
2012	0.093%	3.789%	0.000%	-3.696%	0.093%	-3.789%
2013	2.582%	5.048%	0.502%	-2.466%	2.081%	-4.546%
2014	2.212%	5.071%	3.393%	-2.859%	-1.181%	-1.678%
2015	2.977%	5.681%	0.965%	-2.704%	2.012%	-4.716%
2016	1.002%	8.028%	-0.191%	-7.026%	1.193%	-8.219%
<b>Last 5 Yrs Annual Count(Years)</b>	<b>1.768%</b>	<b>5.514%</b>	<b>0.926%</b>	<b>-3.765%</b>	<b>0.832%</b>	<b>-4.613%</b>
<b>2012 to '16(Compound) Change since 2012</b>	<b>109.16%</b>	<b>130.78%</b>	<b>104.71%</b>	<b>82.54%</b>	<b>104.23%</b>	<b>78.97%</b>
	<b>9.16%</b>	<b>30.78%</b>	<b>4.71%</b>	<b>-17.46%</b>	<b>4.23%</b>	<b>-21.03%</b>
	Nominal GDP Growth w/Inflation	Compounded Intermediation	Compounded Inflation	Real $r_f$ GDP Growth	Nominal GDP - Inflation	Real $r_f$ GDP - Nominal GDP

TABLE 12 DATA SOURCE: BOJ Annual Monetary Intermediation Cost 1995 to 2016, Attachment 4.

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

<sup>14</sup> BOJ Annual Monetary Intermediation Cost 1995 to 2016 using M1 Money Stock, Attachment 4.



## **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 1.3% reserve requirement, converting ¥1 to gold would reduce the money stock by ¥76.92, an approximate seventy-seven 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 the United States in terms of gold, which did not result in a matching increase in prices in the U.S. economy.<sup>15</sup>

A 100% reserve system does not need any underlying 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> *Money and Freedom*, Robert de Fremery, 1955, Ch. 7 "Shall We Return to a Gold Standard--Now", Reference 8.

## **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 the people based on a GDP monetary standard instead of Bank of Japan Member Banks is expected to improve Japanese economic performance by the approximate amount of the reduced monetary intermediation cost, on the order of 4¼% of GDP per year<sup>16</sup> and restore on the order of seven to eight million or more 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 Bank of Japan Notes would be allowed to continue in circulation and be exchanged with new issue Japanese Bills "backed by the people of Japan" as part of routine currency replacement maintenance.

The conversion process is described below with before and after balance sheets included in Attachments 6(a) to (d).

*B. Commercial Banking System* Consolidated Commercial Banks 3/31/17 Balance Sheet-Attachment 6(a)

*B.1. Full Reserve Banks* Sample Bank (Mitsubishi) 3/31/2017 Balance Sheet - Attachment 6(b)

*B.2. Deposit Only Institutions* Sample Bank (Mitsubishi) 3/31/2017 Balance Sheet - Attachment 6(b)

*C. Bank of Japan* Bank of Japan (BOJ) 3/31/2017 Balance Sheet - Attachment 6(c)

*D. Japanese Government* Japanese Government Fiscal 2016 Balance Sheet - Attachment 6(d)

*D.1. Ministry of Economy, Trade and Industry (Commerce)*

*D.2. Ministry of Finance*

### *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 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 investment theory today. It is believed financial laws of investing are universally applicable and apply to

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<sup>16</sup> Bank of Japan Compounded Monetary Intermediation Cost since 1995 to 2016, Attachment 5.

<sup>17</sup> Bank of Japan Monetary Intermediation Cost Impact on Economy and Jobs, Attachment 9.

<sup>18</sup> Suggested by among others David Hume in "Of Money", 1752, Reference 14.

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 Hokkaido Takushoku Bank, Ltd. in 1997 and Long-term Credit Bank of Japan, Ltd. in 1998 failed utilizing mismatched maturity business models. These are business model risks, not systematic risks that the Japanese economic system can diversify away with matched maturity funding at zero credit intermediation loss to the system as shown in section 3. There is no downside to conversion from a systematic point of view and the stability and profitability 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 Japanese government securities that would be credited to the demand deposit accounts and retired as obligations of the Japanese government. Commercial banks would also receive a one-time monetary conversion loan from the Japanese government in the approximate amount of ¥534.1 trillion to cover their remaining fractional reserve shortage in demand deposit funds as detailed below.

<b>Commercial Bank Debt to Japanese Government from conversion to 100% Reserve Demand Deposits<sup>3</sup></b>		
(¥ Millions)	For Week Ending	3/31/2017
Commercial Bank Deposits (Assumed all Demand)		¥823,762,049
Less: Cash and due from banks		-¥209,702,255
Less: Japanese Government Securities Holdings Retired		-¥79,991,700
Bonded Debt to Japanese Government from Funding 100% Demand Deposit Conversion		¥534,068,094
<b>Source:</b> Japanese Bankers Assn FY2016 Fin Stmts All Banks, Each Category Bank, Bal sheet All Banks (3/31/2017)		

TABLE 13 DATA SOURCE: Japanese Commercial Banks Consolidated Conversion Estimate Fiscal 2016, Attachment 6(a).

The monetary conversion loan from the Japanese government would be at a market rate for equivalent debt. The interest rate for the monetary conversion loan could be a premium over the new risk free rate of return or interest rate ( $r_f$ ), which would match the risk free seigniorage rate at the new depositories. 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 ¥534.1 trillion monetary loan would be used to retire outstanding Federal debt.

Shinkin banks and any other financial institutions that take material demand deposits and/or issue credit would have up to one month 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 and credit provider conversion to full 100% reserve institutions. Placing funds with a commercial bank or shinkin bank would be expected to have a premium return over the risk free deposit only institutions. Any public insurance of commercial bank or shinkin bank 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 Japan. As mentioned in the Commercial banks section, fractional reserve lenders would do this in exchange for a monetary conversion loan of approximately ¥534.1 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 Japanese 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 that would have a minimal intermediary charge to cover system costs and would assume the Zengin check processing payment system to partially finance their operations. A second source of revenue and expected to be the main source would be new money issued, known as Seigniorage, paid directly to cash demand deposit holders, on a pro-rata basis by amount of cash held at the new depositor owned institutions in accordance with the GDP growth standard.

It is anticipated 2% to 4% annual increases to the money stock would be made based on the GDP growth standard. Expansions of the money stock would be voted on by the National Diet and signed into law by the Prime Minister. This process could be automated requiring governmental action only if the seigniorage payment were to be taxed in some manor. The payments would be anticipated to be made 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 seigniorage payments could be taxed at the time of issuance or exempted as the increased money in circulation would be expected to increase revenues to the government by the same approximate percentage as the increase of the money stock.

Direct issue would be at least a 98.7%<sup>19</sup> improvement (1-reserve requirement) in the intermediation process of adding money to the system and should save on the order of 4¼% of GDP per year<sup>20</sup> from the reduced monetary intermediation cost to the system.

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>21</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. 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 Deposit Insurance Corporation of Japan (DICJ) because all deposits would be depositor owned and backed 100%. Commercial banks and other full reserve institutions will exclusively handle lending activity.

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<sup>19</sup> Bank of Japan Monetary Intermediation Cost Inefficiency Estimate, Attachment 1.

<sup>20</sup> Bank of Japan Compounded Monetary Intermediation Cost 1995 to 2016, Attachment 5.

<sup>21</sup> *Money and Freedom*, Robert de Fremery, 1955, Ch. 3 "Origin of Banking", Reference 8.

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.

A full reserve system will work better than the current fractional reserve system. The key to a highly efficient, well functioning growth-oriented economy is that commerce, routine on-going transactions, proceeds independent of any financial institution that might fail. Failure of any financial institution, up to and including all financial institutions, would not affect the daily routine of commerce with a depositor owned full reserve monetary system and therefore financial risk would be removed as a systematic risk for the Japanese economic system. As shown in Section 3 there is no credit intermediation loss with a full reserve system and there would be a more efficient allocation of economic returns reducing and/or eliminating the current wealth transfer disparity caused by the fractional reserve system.

*C. Bank of Japan*

The Bank of Japan would be divided into two parts in the same manner as commercial banks. The deposit only portion of the BOJ would be assigned to the Ministry of Finance and assist with the financial operations of the federal government. The Bank of Japan Financial Network System (BOJ-NET) would be assigned and maintained on a pro rata basis to the Japanese commercial banking system or to the new demand depositor owned institutions which would be expected to develop a network for processing checks and debit card transactions to finance their operations. The payment systems for the commercial banking system and depositor owned depositories would be expected to be maintained separately so as not to commingle any of their payment systems and/or minimize any possible commingling of their payment systems something like the VISA and MasterCard payment systems, which exist as separately maintained systems.

The remaining operations of the Bank of Japan would sunset and close with any remaining assets divided out to the remaining ownership entities. The ability of the BOJ 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 Japanese government and retired. The Ministry of Economy, Trade and Industry (Commerce) would maintain bank regulatory activity going forward.

Bank of Japan Notes would be converted at par with new debt free Japanese Bill currency issued and backed by the people of Japan. Existing Bank of Japan Notes would be allowed to continue in circulation and replaced as part of routine currency maintenance.

<b>Bank of Japan Statement Change from conversion to 100% Demand Deposits<sup>1</sup></b>		
	(¥ Millions)	For Period Ending
		3/31/2017
Bank of Japan Banknotes (currency) Retired & Replaced with Japanese Bills		¥99,800,188
Plus: Cash Equivalents Needed to cover Deposit Liabilities (Assumed all Demand)		¥377,485,219
<u>Less: Japanese Government Securities Holdings Retired</u>		<u>-¥417,711,474</u>
Bonded Debt to Japanese Government from Funding 100% Demand Deposit Conversion		¥59,573,932
<b>Source:</b> Bank of Japan 2017 Annual Review (Fiscal 2016) Balance Sheet p. 64.		

TABLE 14 DATA SOURCE: Bank of Japan Conversion Estimate Balance Sheet, Attachment 6(c).

*D. Japanese 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 Ministry of Economy, Trade and Industry (Commerce). Increases in the money stock based on the GDP standard would to be handled in traditional legislative manner.

*D.1. Ministry of Economy, Trade and Industry (Commerce)*

The Ministry of Economy, Trade and Industry 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 Ministry of Economy, Trade and Industry. The Ministry of Economy, Trade and Industry would also maintain commercial bank regulatory activity going.

*D.2. Ministry of Finance*

The mission statement of the Ministry of Finance would be redefined to manage the Japanese Government's finances and resources effectively. Managing government accounts, public debt, revenue collection and tax policy would be functions of the Ministry of Finance. The deposit only portion of the BOJ would be assigned to the Ministry of Finance and assist with the financial operation of the federal government.

<b>Japanese Government Debt (Before Conversion)</b>			
(¥ Millions)	As of	3/31/2016	% Total
Financing bills		<b>¥86,382,309</b>	8.4%
Government bonds		<b>¥917,473,470</b>	88.8%
Borrowings		<b>¥29,882,130</b>	2.9%
Total Japanese Government Debt		<b>¥1,033,737,909</b>	100.0%

<b>Japanese Government Debt (After Conversion)</b>			
(¥ Millions)	As of	3/31/2016	% Total
Total Japanese Fed Government Debt		<b>¥1,033,737,909</b>	100.0%
- Fed debt held by the BOJ retired <sup>c,2</sup>		<b>-¥417,711,474</b>	-40.4%
- Fed debt held by com. banks retired <sup>c,3</sup>		<b>-¥79,991,700</b>	-7.7%
- Bank debt to Gov't from conversion <sup>b</sup>		<b>-¥534,068,094</b>	-51.7%
- BOJ debt to Gov't from Conversion <sup>b</sup>		<b>-¥59,573,932</b>	-5.8%
Japanese Gov't Debt after conversion		<b>-¥57,607,291</b>	-5.6%
<b>Total Japanese Gov't Debt Retired</b>		<b>¥1,091,345,200</b>	<b>105.6%</b>

TABLES 15 & 16 DATA SOURCE: Japanese Government Consolidated Balance Sheet Conversion Est., Attachment 6(d).

## **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 Prime Minister 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 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**

The Bank of Japan's Monetary System is not the most efficient means of controlling the money stock in Japan. It adds unnecessary intermediation cost to the economy since no value is added from its money creation and fractional reserve activity and therefore lowers returns to the economy by the amount of its intermediation cost. 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.

Replacing the Bank of Japan System with a 100% reserve system and GDP based monetary standard would result in 98.7%<sup>22</sup> lower monetary intermediation cost, less structural leverage risk, a more stable economy, more efficient allocation of capital and a higher standard of living for all Japanese. Returning control of monetary policy to the people would also restore transparency and accountability to the taxpayers and voters of Japan that is not possible with the current system. Unfair and unequal discretionary bailouts of some companies and not others would be eliminated<sup>23</sup> and critically involuntary wealth transfers to the banking sector from the other sectors of the economy would also be eliminated.<sup>24</sup>

At least five previous Nobel Prize winners, Milton Friedman, 1976, James Tobin, 1981, Maurice Allais, 1988, Merton Miller, 1990 and Frederick Soddy, 1921 along with Irving Fisher, one of the foremost economists of the first half of the 20<sup>th</sup> Century have all supported full reserve monetary systems<sup>25</sup>.

As shown in Section 3 there is no credit intermediation loss with a full reserve system and there would be a more efficient allocation of capital and economic returns reducing and/or eliminating the current wealth transfer disparity caused by the fractional reserve system. The improvement to the Japanese economy is expected to be the amount of the reduced monetary intermediation cost, on the order of 4¼% of GDP per year<sup>26</sup>. Conversion to a full reserve monetary system is also estimated to improve the balance sheet of Japan on the order of ¥1,091.3 trillion<sup>27</sup> as of fiscal year 2016 and restore on the order of seven to eight million or more jobs<sup>27</sup>.

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<sup>22</sup> Bank of Japan Monetary Intermediation Cost Inefficiency Estimate, Attachment 1.

<sup>23</sup> Deposit Insurance Corporation of Japan, Status of Financial Assistance and Recovery (as of March 31, 2017), Reference 9.

<sup>24</sup> Deposit Insurance Corporation of Japan Financial Assistance (by Fiscal Year), Attachment 8.

<sup>25</sup> Historical Support for 100% Full Reserve Demand Deposit Banking, Attachment 11.

<sup>26</sup> Bank of Japan Compounded Monetary Intermediation Cost since 1995 to 2016, Attachment 5.

<sup>27</sup> Bank of Japan Monetary Intermediation Cost Impact on Economy and Jobs, Attachment 9.



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## Attachment 1

# Bank of Japan Monetary Intermediation Cost

## Monetary Intermediation Cost Inefficiency Estimate

### (with Wealth Transfer Effect)

<b>I. Intermediation Cost using Current Bank of Japan Monetary System</b>		
<b>Bank of Japan Monetary Issuance System</b>	<b>\$ Amount</b>	<b>Efficiency of Monetary Increase</b>
1. Bank of Japan acquires government issued debt	¥1,000,000	1.3%
2. Bank of Japan Reserve Requirement (est.) <sup>1</sup>	1.3%	
3. Money Supply Increase via Bank of Japan Loans	¥76,923,077	100.0%
4. Bank of Japan's net Increased Loans (Intermediation Cost)	¥75,923,077	98.7%

People/Gov't Benefit

Intermediation Cost

#### Intermediation Cost Inefficiency Utilizing Bank of Japan Monetary System

With the Bank of Japan's (BOJ) approximate 1.3% fractional reserve lending requirement, 98.7% of the money supply increase is in the form of new BOJ member bank loans with 1.3% of the increase to the government from new debt issuance indicating that the cost of using the Bank of Japan as an intermediary to increase the money stock is 98.7%. 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 BOJ is equivalent to 98.7% direct wealth transfer.

<b>II. Direct Monetary Expansion System to People using Government Entity</b>		
<b>Direct Monetary Issuance System</b> (Possible Ministry Economy, Trade&I)	<b>\$ Amount</b>	<b>Efficiency of Monetary Increase</b>
1. People issued bills directly from government (METI)	¥1,000,000	100.0%
2. Japanese people portion of issued bills	100.0%	
3. Money stock increase to people via direct government issue	¥1,000,000	100.0%
4. Bank of Japan's net increased loans (Intermediation Cost)	¥0	0.0%

People/Gov't Benefit

Intermediation Cost

#### Intermediation Efficiency Increase with Direct Issuance of Currency

With direct issuance of money stock increases to the Japanese people and/or people holding Yen denominated demand deposit accounts, anticipated to most naturally be voted on by Japanese Diet and administered by the Ministry of Economy, Trade and Industry, 100% of the increase in the money stock goes direct to the Japanese people with no intermediation loss. Direct issuance of money stock increases eliminating the intermediation cost of the Bank of Japan would be at least 98.7% 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.

<b>Deposit Reserve Requirement Ratios<sup>1</sup></b>		<b>Other Req'd Reserves</b>
<b>As of</b>	<b>10/16/1991</b>	<b>Time Deposits (CDs)</b>
¥50-500 Billion Yen	0.10%	0.05%
¥500 Billion-1.2 Trillion Yen	0.80%	0.05%
¥1.2-2.5 Trillion Yen	1.30%	0.90%
More than ¥2.5 Trillion Yen	1.30%	1.20%

#### **SOURCE:**

1-Bank of Japan Reserve Requirement Ratios at

<http://www.boj.or.jp/en/statistics/boj/other/reservereq/index.htm/>

## Bank of Japan Monetary Intermediation Cost Fractional Reserve Analysis with 1.3% Reserve Requirement (Example)

### No Financial Intermediary Analysis

When no financial intermediary is involved, intermediation must be real direct asset lending. In this example, Manufacturer as Intermediary lends Farmer a tractor to use for ¥50,000. Farmer rents the tractor from Manufacturer and grows a crop which is sold. In this system ¥150,000 of wealth is created from crop sale split ¥100,000 to Farmer and ¥50,000 to Manufacturer for use of the tractor with financial intermediary not participating at ¥0.

I. No Financial Intermediary (Real Asset Tractor Lending)					
	Farmer	Manufacturer	Intermediary	Total	
Start (Cash)	¥49,675	¥49,675	¥650	¥100,000	Begin Cash
Tractor Rent	-¥50,000	¥50,000		¥0	
Sell Crop	¥150,000			¥150,000	
End (Cash)	¥149,675	¥99,675	¥650	¥250,000	End Cash
Direct Net Earnings	¥100,000	¥50,000	¥0	¥150,000	Earnings (¥)
% Earnings	66.67%	33.33%	0.00%	100.00%	Earnings (%)

II. With 1.3% Reserve Financial Intermediation Added ( 1.3% Real Backing)					
	Farmer	Manufacturer	Intermediary	Total	
Start (Cash)	¥49,675	¥49,675	¥650	¥100,000	Begin Cash
Direct Net Earnings(Above)	¥100,000	¥50,000	¥0	¥150,000	
Loan	¥50,000		¥50,000	¥50,000	
Loan Interest	-¥2,500		¥2,500	¥0	
Pay Back Loan	-¥50,000		¥50,000	¥0	
End (Cash)	¥147,175	¥99,675	¥52,500	¥299,350	End Cash
Net Earnings	¥97,500	¥50,000	¥51,850	¥199,350	Earnings (¥)
% Earnings	48.91%	25.08%	26.01%	100.00%	Earnings (%)
Wealth Transfer=(Principal+Interest) x (1- RR). Inflation is Principal portion wealth transfer				19.74%	Inflation Cash (%)
Inflation Cash (¥) [Principal Wealth Transfer] = Total Cash (¥) End - Total Cash (¥) Begin				¥49,350	Inflation Cash (¥)

1.3% Fractional Reserve Requirement Financial Intermediation/Wealth Transfer Impact						
Item	Item \$ Amount	Inflation	¥ Unearned	% Unearned	¥ Earned	Total Return
Loan Principal (a)	¥50,000	¥49,350	¥49,350	98.70%		¥49,350
Interest (Loan(a) x (c))	¥2,500		¥2,468	98.70%	¥33	¥2,500
Total	¥52,500	¥49,350	¥51,818	98.70%	¥33	¥51,850
<b>Wealth Transfer (Unearned Return = <math>\sum(B)</math>)</b>						¥51,818
<b>Financial Intermediation Unearned Return % (Unearned Return/Total Return = <math>\sum(B)/\sum(D)</math>)</b>						99.94%
<b>Intermediary Return on ¥650 Required Reserve Investment (Total Return/Start Cash)</b>						7976.92%
<b>Earned Financial Intermediation (Interest x Reserve Requirement = <math>\sum(C)</math>)</b>						¥33
<b>Earned Financial Intermediation % of Total Return of ¥51850 (Earned Return/Total Return)</b>						0.06%

### 1.3% Fractional Reserve Financial Intermediation Analysis

In this 1.3% fractional reserve system the Financial Intermediary adds a ¥50,000 loan into the system 98.7% (1-reserve requirement) backed by no real or financial assets, increasing fractional reserve returns by ¥49,350 to ¥199,350 from the sale of the exact same crop now split ¥97,500 to Farmer, ¥50,000 to Manufacturer and ¥51,850 to the intermediary that added 1.3% real credit. Farmer pays back a ¥50,000 loan and pays interest of ¥2,500 for 1.3% (¥650) of true credit intermediation. In the real world Farmer would not borrow money this way unless he thought he was getting something. Farmer cannot tell the difference between real credit of Tractor lending and 98.7% unbacked, 1.3% reserve financial intermediation. The 98.7% unbacked Financial Intermediary loan captures an extra 24.34% to 26.01% of the system earnings in the form of inflation and interest in a 98.7% 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 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	¥100,000
Tractor Rent \$	¥50,000
Crop Sale Price	¥150,000
(a)-Loan Amount \$	¥50,000
(b)-Reserve Requirement (RR)	1.30%
(c)-Interest Rate	5.00%

## Bank of Japan Monetary Intermediation Cost Fractional Reserve 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, Manufacturer as Intermediary lends Farmer a tractor to use for ¥50,000. Farmer rents the tractor from Manufacturer and grows a crop which is sold. In this system ¥150,000 of wealth is created from crop sale split ¥100,000 to Farmer and ¥50,000 to Manufacturer for use of the tractor with financial intermediary not participating at ¥0.

I. No Financial Intermediary (Real Asset Tractor Lending)					
	Farmer	Manufacturer	Intermediary	Total	
Start (Cash)	¥25,000	¥25,000	¥50,000	¥100,000	Begin Cash
Tractor Rent	-¥50,000	¥50,000		¥0	
Sell Crop	¥150,000			¥150,000	
End (Cash)	¥125,000	¥75,000	¥50,000	¥250,000	End Cash
Direct Net Earnings	¥100,000	¥50,000	¥0	¥150,000	Earnings (¥)
% Earnings	66.67%	33.33%	0.00%	100.00%	Earnings (%)

II. With 100% Reserve Financial Intermediation Added ( 100% Real Backing)					
	Farmer	Manufacturer	Intermediary	Total	
Start (Cash)	¥25,000	¥25,000	¥50,000	¥100,000	Begin Cash
Direct Net Earnings(Above)	¥100,000	¥50,000	¥0	¥150,000	
Loan	¥50,000		¥50,000	¥50,000	
Loan Interest	-¥2,500		¥2,500	¥0	
Pay Back Loan	-¥50,000		¥50,000	¥0	
End (Cash)	¥122,500	¥75,000	¥52,500	¥250,000	End Cash
Net Earnings	¥97,500	¥50,000	¥2,500	¥150,000	Earnings (¥)
% Earnings	65.00%	33.33%	1.67%	100.00%	Earnings (%)
Wealth Transfer=(Principal+Interest) x (1- RR). Inflation is Principal portion wealth transfer				0.00%	Inflation Cash (%)
Inflation Cash (¥) [Principal Wealth Transfer] = Total Cash (¥) End - Total Cash (¥) Begin				¥0	Inflation Cash (¥)

100% Fractional Reserve Requirement Financial Intermediation/Wealth Transfer Impact						
Item	Item \$ Amount	Inflation	¥ Unearned	% Unearned	¥ Earned	Total Return
Loan Principal (a)	¥50,000	¥0	¥0	0.00%		¥0
Interest (Loan(a) x (c))	¥2,500		¥0	0.00%	¥2,500	¥2,500
Total	¥52,500	¥0	¥0	0.00%	¥2,500	¥2,500
<b>Wealth Transfer (Unearned Return = <math>\sum(B)</math>)</b>						¥0
<b>Financial Intermediation Unearned Return % (Unearned Return/Total Return = <math>\sum(B)/\sum(D)</math>)</b>						0.00%
<b>Intermediary Return on ¥50000 Required Reserve Investment (Total Return/Start Cash)</b>						5.00%
<b>Earned Financial Intermediation (Interest x Reserve Requirement = <math>\sum(C)</math>)</b>						¥2,500
<b>Earned Financial Intermediation % of Total Return of ¥2500 (Earned Return/Total Return)</b>						100.00%

### 100% Fractional Reserve Financial Intermediation Analysis

In this 100% fractional reserve system the Financial Intermediary adds a ¥50,000 loan into the system 100% backed by real financial assets (intermediary start cash), increasing fractional reserve returns by ¥0 to the same ¥150,000 from the sale of the exact same crop now split ¥97,500 to Farmer, ¥50,000 to Manufacturer and ¥2,500 to the intermediary that added 100% real credit. Farmer pays back a ¥50,000 loan and pays interest of ¥2,500 for 100% (¥50,000) of true credit intermediation. In the real world Farmer might 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	¥100,000
Tractor Rent \$	¥50,000
Crop Sale Price	¥150,000
(a)-Loan Amount \$	¥50,000
(b)-Reserve Requirement (RR)	100.00%
(c)-Interest Rate	5.00%

**Bank of Japan Monetary Intermediation Cost**

**Fractional Reserve Loan Analysis Table from 100% to 0% Reserve Requirement (Example)**

**Fractional Reserve Lending Financial Intermediation Analysis**

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. In this example Farmer (Labor) sells a crop for ¥150,000 with the Financial Intermediary making a ¥50,000 loan at 5% to Farmer backed by the fractional reserve requirement to pay the ¥50,000 tractor rent to Manufacturer (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. 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.

#	Formula (d)-Reserve Requirement	= (d) x (c) Loan Req'd Res	¥ Amount Earnings						% Earnings					
			(1) Labor (Farmer)	(2) Capital (Tractor)	(3) Financial Intermediary	(4) System Total	(5) Fin Intermediary Earned	(6) Unearned	(7) Labor (Farmer)	(8) Capital (Tractor)	(9) Financial Intermediary	(10) System Total	(11) Fin Intermediary Earned	(12) Unearned
0	100%	¥50,000	¥97,500	¥50,000	¥2,500	¥150,000	¥2,500	¥0	65.0%	33.3%	1.7%	100.0%	100.00%	0.00%
1	95%	¥47,500	¥97,500	¥50,000	¥5,000	¥152,500	¥2,375	¥2,625	63.9%	32.8%	3.3%	100.0%	47.50%	52.50%
2	90%	¥45,000	¥97,500	¥50,000	¥7,500	¥155,000	¥2,250	¥5,250	62.9%	32.3%	4.8%	100.0%	30.00%	70.00%
3	85%	¥42,500	¥97,500	¥50,000	¥10,000	¥157,500	¥2,125	¥7,875	61.9%	31.7%	6.3%	100.0%	21.25%	78.75%
4	80%	¥40,000	¥97,500	¥50,000	¥12,500	¥160,000	¥2,000	¥10,500	60.9%	31.3%	7.8%	100.0%	16.00%	84.00%
5	75%	¥37,500	¥97,500	¥50,000	¥15,000	¥162,500	¥1,875	¥13,125	60.0%	30.8%	9.2%	100.0%	12.50%	87.50%
6	70%	¥35,000	¥97,500	¥50,000	¥17,500	¥165,000	¥1,750	¥15,750	59.1%	30.3%	10.6%	100.0%	10.00%	90.00%
7	65%	¥32,500	¥97,500	¥50,000	¥20,000	¥167,500	¥1,625	¥18,375	58.2%	29.9%	11.9%	100.0%	8.13%	91.88%
8	60%	¥30,000	¥97,500	¥50,000	¥22,500	¥170,000	¥1,500	¥21,000	57.4%	29.4%	13.2%	100.0%	6.67%	93.33%
9	55%	¥27,500	¥97,500	¥50,000	¥25,000	¥172,500	¥1,375	¥23,625	56.5%	29.0%	14.5%	100.0%	5.50%	94.50%
10	50%	¥25,000	¥97,500	¥50,000	¥27,500	¥175,000	¥1,250	¥26,250	55.7%	28.6%	15.7%	100.0%	4.55%	95.45%
11	45%	¥22,500	¥97,500	¥50,000	¥30,000	¥177,500	¥1,125	¥28,875	54.9%	28.2%	16.9%	100.0%	3.75%	96.25%
12	40%	¥20,000	¥97,500	¥50,000	¥32,500	¥180,000	¥1,000	¥31,500	54.2%	27.8%	18.1%	100.0%	3.08%	96.92%
13	35%	¥17,500	¥97,500	¥50,000	¥35,000	¥182,500	¥875	¥34,125	53.4%	27.4%	19.2%	100.0%	2.50%	97.50%
14	30%	¥15,000	¥97,500	¥50,000	¥37,500	¥185,000	¥750	¥36,750	52.7%	27.0%	20.3%	100.0%	2.00%	98.00%
15	25%	¥12,500	¥97,500	¥50,000	¥40,000	¥187,500	¥625	¥39,375	52.0%	26.7%	21.3%	100.0%	1.56%	98.44%
16	20%	¥10,000	¥97,500	¥50,000	¥42,500	¥190,000	¥500	¥42,000	51.3%	26.3%	22.4%	100.0%	1.18%	98.82%
17	15%	¥7,500	¥97,500	¥50,000	¥45,000	¥192,500	¥375	¥44,625	50.6%	26.0%	23.4%	100.0%	0.83%	99.17%
18	10%	¥5,000	¥97,500	¥50,000	¥47,500	¥195,000	¥250	¥47,250	50.0%	25.6%	24.4%	100.0%	0.53%	99.47%
19	5%	¥2,500	¥97,500	¥50,000	¥50,000	¥197,500	¥125	¥49,875	49.4%	25.3%	25.3%	100.0%	0.25%	99.75%
20	0%	¥0	¥97,500	¥50,000	¥52,500	¥200,000	¥0	¥52,500	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	¥150,000
(b) Tractor Rent	¥50,000
(c) Loan Amount	¥50,000
(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

## Bank of Japan Monetary Intermediation Cost

Bank of Japan (BOJ) Operating Costs 2004 to 2016<sup>1,2,A</sup>

BOJ operating costs estimated as: 1) Interest on Payables(a) + 2) Foreign Currency Losses(b) + 3) Gen Admin Net(c) + 4) Staff(d) + 5) Depreciation(e) and 6) Other Gen & Admin(g). Banknote costs not included as net operating cost since assumed needed with or without BOJ monetary intermediation.

Bank of Japan (BOJ) Operating Costs									
(N) Fiscal	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)=(a)+(b)+(c)+(d)+(e)+(g)	
Year	Interest on Payables (¥ Yen)	Foreign Currency Losses <sup>B</sup> (¥ Yen)	General Admin Net <sup>C</sup> (¥ Yen)	Staff (¥ Yen)	Depreciation (¥ Yen)	Banknotes <sup>D</sup> (¥ Yen)	Other General & Admin (¥ Yen)	Net Operating Cost (¥ Yen)	
# (End 3/31)									
1	2004	¥248,133,110	¥0	¥100,023,986,761	¥49,071,030,457	¥18,364,731,069	¥64,698,822,000	¥44,796,886,597	¥212,504,767,994
2	2005	¥333,815,544	¥878,189,316	¥102,555,287,523	¥49,215,104,503	¥17,210,423,296	¥61,737,716,000	¥45,434,867,902	¥215,627,688,084
3	2006	¥50,552,373,315	¥0	¥102,920,116,941	¥50,177,445,019	¥16,219,358,407	¥55,595,504,000	¥28,120,103,766	¥247,989,397,448
4	2007	¥72,488,833,178	¥603,772,996,799	¥100,983,513,567	¥50,800,656,726	¥15,248,623,560	¥53,108,284,000	¥34,174,935,065	¥877,469,558,895
5	2008	¥57,341,688,997	¥417,748,665,750	¥104,841,308,395	¥50,975,211,435	¥18,892,016,750	¥52,687,718,000	¥131,060,278,333	¥780,859,169,660
6	2009	¥20,258,707,171	¥218,588,510,959	¥73,384,431,924	¥50,094,633,290	¥17,873,189,859	¥50,884,110,000	¥34,811,475,442	¥415,010,948,645
7	2010	¥19,273,928,687	¥481,351,246,922	¥76,790,595,513	¥49,258,973,812	¥18,523,067,861	¥50,160,002,000	¥24,491,342,422	¥669,689,155,217
8	2011	¥17,010,030,431	¥60,622,806,626	¥76,130,716,888	¥49,174,474,092	¥16,404,769,731	¥49,921,440,000	¥67,497,835,225	¥286,840,632,993
9	2012	¥19,902,268,038	¥0	¥78,261,249,442	¥47,589,624,388	¥15,747,683,544	¥48,318,609,000	¥56,745,397,981	¥218,246,223,393
10	2013	¥14,602,562,616	¥0	¥79,977,264,067	¥47,209,437,775	¥15,613,703,287	¥48,016,228,000	¥93,345,064,787	¥250,748,032,532
11	2014	¥5,362,231,841	¥0	¥80,822,922,860	¥50,129,688,012	¥15,078,377,531	¥51,483,108,000	¥161,646,075,085	¥313,039,295,329
12	2015	¥606,924,135	¥408,312,687,486	¥76,113,658,023	¥50,746,955,955	¥15,033,677,650	¥51,685,796,000	¥232,063,502,350	¥782,877,405,599
13	2016	-¥494,834,763	¥155,361,446,180	¥73,981,650,422	¥51,239,050,034	¥14,298,805,925	¥51,805,774,000	¥202,891,478,347	¥497,277,596,145
TOTALS		¥277,486,662,300	¥2,346,636,550,038	1,126,786,702,326	¥645,682,285,498	¥214,508,428,470	¥690,103,111,000	¥1,157,079,243,302	¥5,768,179,871,934

## Notes:

A-BOJ pays its profits to Japanese government after deducting its operating expenses so operating expenses are an intermediation cost.

B-Ignores Foreign currency gains

C-General Admin Net = Total General Administrative - 1) Staff - 2) Depreciation - 3) Banknotes.

D-Banknote costs not included as net operating cost since assumed needed with or without BOJ monetary intermediation.

## Sources:

1-Bank of Japan Annual Reviews from Statements of income for Fiscal Years 2004 to 2016 at

<http://www.boj.or.jp/en/about/activities/act/index.htm/>

2-Bank of Japan, The Bank's Accounts, Financial Statements for Fiscal Years 2004 to 2016 at

<http://www.boj.or.jp/en/about/account/index.htm/>

**Bank of Japan Monetary Intermediation Cost**

**BOJ Annual Monetary Intermediation Cost 1995 to 2016 using M1 Money Stock<sup>1</sup>**

Assumptions

Monetary Intermediation Cost Bank of Japan (¥)										Bank of Japan Reserve Requirement (RR) <b>1.3%</b>					
(N)	(A)	(B) = (A <sub>N</sub> ) - (A <sub>N-1</sub> )	(C) = (B <sup>3</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 M1-NS <sup>1</sup> (¥ Billions)	¥ Increase Prior Year (¥ Billions)	Money Stock Change Intermediation Cost (¥ Billions)	Actual (Net) Operations <sup>2</sup> (¥ Billions)	Total Annual Intermediation Cost (¥ Billions)	GDP <sup>3</sup> (¥ Billions)	Monetary Intermediation Cost Bank of Japan (% Est.)				Comparison Analysis			
								GDP <sup>3</sup> (% Growth)	Intermediation (% GDP Cost)	Inflation % CPI (EOY) <sup>4</sup>	GDP-Intermediation Net (% GDP) (r <sub>i</sub> )	GDP-Inflation Net (% GDP)	Real r <sub>f</sub> GDP - Nominal GDP		
0	1994	¥165,930.0					¥502,636.2								
1	1995	¥179,475.7	¥13,545.7	¥13,369.61		¥13,369.61	¥516,406.5	2.740%	2.589%	-0.293%	0.151%	3.033%	-2.882%		
2	1996	¥204,092.4	¥24,616.7	¥24,296.68		¥24,296.68	¥528,766.4	2.393%	4.595%	0.000%	-2.202%	2.393%	-4.595%		
3	1997	¥221,886.4	¥17,794.0	¥17,562.68		¥17,562.68	¥533,338.2	0.865%	3.293%	1.567%	-2.428%	-0.702%	-1.726%		
4	1998	¥240,855.0	¥18,968.6	¥18,722.01		¥18,722.01	¥526,013.4	-1.373%	3.559%	0.675%	-4.933%	-2.048%	-2.884%		
5	1999	¥266,201.4	¥25,346.4	¥25,016.90		¥25,016.90	¥521,988.3	-0.765%	4.793%	-0.383%	-5.558%	-0.382%	-5.176%		
6	2000	¥287,979.0	¥21,777.6	¥21,494.49		¥21,494.49	¥528,512.7	1.250%	4.067%	-0.865%	-2.817%	2.115%	-4.932%		
7	2001	¥312,504.8	¥24,525.8	¥24,206.96		¥24,206.96	¥519,073.5	-1.786%	4.663%	-0.873%	-6.449%	-0.913%	-5.536%		
8	2002	¥398,448.1	¥85,943.3	¥84,826.04		¥84,826.04	¥514,764.4	-0.830%	16.479%	-1.174%	-17.309%	0.344%	-17.653%		
9	2003	¥430,543.8	¥32,095.7	¥31,678.46		¥31,678.46	¥517,930.6	0.615%	6.116%	-0.297%	-5.501%	0.912%	-6.413%		
10	2004	¥448,447.4	¥17,903.6	¥17,670.85	¥212.50	¥17,883.36	¥521,180.2	0.627%	3.431%	0.000%	-2.804%	0.627%	-3.431%		
11	2005	¥469,326.8	¥20,879.4	¥20,607.97	¥215.63	¥20,823.60	¥525,692.2	0.866%	3.961%	-0.397%	-3.095%	1.263%	-4.358%		
12	2006	¥483,207.6	¥13,880.8	¥13,700.35	¥247.99	¥13,948.34	¥529,076.6	0.644%	2.636%	0.299%	-1.993%	0.345%	-2.337%		
13	2007	¥482,837.3	¥-370.3	¥-365.49	¥877.47	¥511.98	¥530,997.3	0.363%	0.096%	0.099%	-0.267%	0.264%	0.003%		
14	2008	¥480,386.7	¥-2,450.6	¥-2,418.74	¥780.86	¥-1,637.88	¥509,465.8	-4.055%	-0.321%	1.589%	-3.733%	-5.644%	1.910%		
15	2009	¥482,867.0	¥2,480.3	¥2,448.06	¥415.01	¥2,863.07	¥492,070.4	-3.414%	0.582%	-1.466%	-3.996%	-1.948%	-2.048%		
16	2010	¥492,396.0	¥9,529.0	¥9,405.12	¥669.69	¥10,074.81	¥499,281.0	1.465%	2.018%	-0.794%	-0.553%	2.259%	-2.812%		
17	2011	¥515,772.0	¥23,376.0	¥23,072.11	¥286.84	¥23,358.95	¥494,017.2	-1.054%	4.728%	-0.300%	-5.783%	-0.754%	-5.028%		
18	2012	¥534,532.8	¥18,760.8	¥18,516.91	¥218.25	¥18,735.16	¥494,478.0	0.093%	3.789%	0.000%	-3.696%	0.093%	-3.789%		
19	2013	¥560,220.8	¥25,688.0	¥25,354.06	¥250.75	¥25,604.80	¥507,246.0	2.582%	5.048%	0.502%	-2.466%	2.081%	-4.546%		
20	2014	¥586,543.9	¥26,323.1	¥25,980.90	¥313.04	¥26,293.94	¥518,468.5	2.212%	5.071%	3.393%	-2.859%	-1.181%	-1.678%		
21	2015	¥616,483.1	¥29,939.2	¥29,549.99	¥782.88	¥30,332.87	¥533,904.4	2.977%	5.681%	0.965%	-2.704%	2.012%	-4.716%		
22	2016	¥659,839.4	¥43,356.3	¥42,792.67	¥497.28	¥43,289.95	¥539,254.3	1.002%	8.028%	-0.191%	-7.026%	1.193%	-8.219%		
TOTALS		¥659,839.4	¥493,909.4	¥487,488.58	¥5,768.18	¥493,256.76	Growth Rates	<b>0.32%</b>	<b>4.26%</b>	<b>0.09%</b>	<b>-4.04%</b>	<b>0.23%</b>	<b>-4.29%</b>		
Averages (1994-2016)			¥22,450.43	¥22,158.57	¥509.21	¥22,420.76	Count(Years)	22	22	22	22	22	22		
Ave Last 10 Years (2007-2016)			¥17,663.18	¥17,433.56	¥509.21	¥17,942.76	Last 10 Yrs	<b>0.19%</b>	<b>3.44%</b>	<b>0.37%</b>	<b>-3.28%</b>	<b>-0.19%</b>	<b>-3.13%</b>		
							Count(Years)	10	10	10	10	10	10		
							Last 5 Yrs Annual	<b>1.77%</b>	<b>5.51%</b>	<b>0.93%</b>	<b>-3.77%</b>	<b>0.83%</b>	<b>-4.61%</b>		
							Count(Years)	5	5	5	5	5	5		
							2016 Economy to 2012 (Last 5 Compounded)	<b>109.2%</b>	<b>130.8%</b>	<b>104.7%</b>	<b>82.5%</b>	<b>104.2%</b>	<b>79.0%</b>		
							Change since 2007 (Last 5 Compounded Net Change)	<b>9.2%</b>	<b>30.8%</b>	<b>4.7%</b>	<b>-17.5%</b>	<b>4.2%</b>	<b>-21.0%</b>		
							Nominal GDP Growth w/Inflation		Compounded Intermediation	Compounded Inflation	Real r <sub>f</sub> GDP Growth	Nominal GDP - Inflation	Real r <sub>f</sub> GDP - Nominal GDP		

**Bank of Japan Monetary Intermediation Cost Estimate**  
 Intermediation cost percentage estimated as [(M1 Money Stock growth in ¥) times (1- Reserve Requirement) + BOJ net operating cost] divided by [GDP (¥)].

2016 Economy to 2012 (Last 5 Compounded)  
 Change since 2007 (Last 5 Compounded Net Change)

**SOURCES:**

- 1-M1 Money Stock data Annual Calendar (Not Seasonally Adjusted) from Federal Reserve Bank of St. Louis at <https://fred.stlouisfed.org/series/MANMM101JPA189S> Last Update: **10/17/2017**
- 2-BOJ operating costs from Attachment 3 via Bank of Japan Annual Reviews at <http://www.boj.or.jp/en/about/activities/act/index.htm/>
- 3-GDP data from Cabinet Office, Government of Japan, Time Series Data, Annual Nominal, Fiscal Year GDP at [http://www.esri.cao.go.jp/en/sna/sokuhou/sokuhou\\_top.html](http://www.esri.cao.go.jp/en/sna/sokuhou/sokuhou_top.html) Download Date: **1/12/2018**
- 4-Inflation CPI data from Statistics Japan CPI data 2010-Base, All Japan Annual Average at <http://www.stat.go.jp/english/data/cpi/1588.htm#his> Last Update: **1/27/2017**

**Notes**

- 1-M1 comprises notes and coins in circulation outside banking corporations and demand and savings deposits of households, nonfinancial corporations, local governments, securities companies, Tanshi companies, and some other financial corporations such as securities finance companies with banking corporations in national currency.
- 2-BOJ operating expenses from Attachment 3 BOJ Operating Costs.
- a-Ignores potential interest rate manipulation intermediation costs.

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

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



## Attachment 5

## Bank of Japan Monetary Intermediation Cost

Bank of Japan (BOJ) Compounded Monetary Intermediation Cost to Economy 1995 to 2016<sup>1</sup>

## M1 Money Stock Basis

(a)-Net GDP Productivity Growth Rate to economy (GDP Growth Rate (c) minus Intermediation Cost (b)) - ( r<sub>f</sub>)

Assumptions	% Total
(a)-Net GDP Productivity Growth Rate to economy (GDP Growth Rate (c) minus Intermediation Cost (b)) - ( r <sub>f</sub> )	-3.94%
(b)-Intermediation Cost Percentage <sup>2</sup>	4.26%
(c)-GDP Growth Rate (Net GDP + Intermediation Percentage) <sup>2</sup>	0.32%
	100.0%

(b)-Intermediation Cost Percentage<sup>2</sup>(c)-GDP Growth Rate (Net GDP + Intermediation Percentage)<sup>2</sup>

GDP EARNINGS WITH FED INTERMEDIATION EXPENSE INCLUDED									
(N)	(A)	(B) = (A) x (c)	(C) = (A) x (b)	(D) = (A)+(B)+(C)	(E)=∑ (C) Compounded				
Period	Year	Net GDP <sup>3</sup> Year(Begin) (¥ Billions)	Productivity Growth (Net) (¥ Billions)	BOJ Intermediation Expense <sup>2</sup>	Net GDP Year (End) (¥ Billions)	Compounded Intermediation		Growth Rates	Count (Years)
						Expense <sup>4</sup>	%		
1	1995	¥502,636.2	¥1,609.2	-¥21,434.8	¥482,810.6	¥21,434.8	4.3%		
2	1996	¥482,810.6	¥1,545.7	-¥20,589.3	¥463,767.1	¥42,092.7	8.3%		
3	1997	¥463,767.1	¥1,484.8	-¥19,777.2	¥445,474.6	¥62,004.6	12.2%		
4	1998	¥445,474.6	¥1,426.2	-¥18,997.1	¥427,903.7	¥81,200.3	15.9%		
5	1999	¥427,903.7	¥1,369.9	-¥18,247.8	¥411,025.8	¥99,708.0	19.5%		
6	2000	¥411,025.8	¥1,315.9	-¥17,528.1	¥394,813.6	¥117,555.3	22.9%		
7	2001	¥394,813.6	¥1,264.0	-¥16,836.7	¥379,240.9	¥134,768.4	26.2%		
8	2002	¥379,240.9	¥1,214.1	-¥16,172.6	¥364,282.5	¥151,372.4	29.4%		
9	2003	¥364,282.5	¥1,166.3	-¥15,534.7	¥349,914.0	¥167,391.8	32.4%		
10	2004	¥349,914.0	¥1,120.3	-¥14,922.0	¥336,112.3	¥182,849.6	35.2%		
11	2005	¥336,112.3	¥1,076.1	-¥14,333.4	¥322,855.0	¥197,768.4	38.0%		
12	2006	¥322,855.0	¥1,033.6	-¥13,768.0	¥310,120.5	¥212,169.6	40.6%		
13	2007	¥310,120.5	¥992.9	-¥13,225.0	¥297,888.4	¥226,073.9	43.1%		
14	2008	¥297,888.4	¥953.7	-¥12,703.4	¥286,138.7	¥239,501.0	45.6%		
15	2009	¥286,138.7	¥916.1	-¥12,202.3	¥274,852.5	¥252,470.1	47.9%		
16	2010	¥274,852.5	¥879.9	-¥11,721.0	¥264,011.5	¥264,999.4	50.1%		
17	2011	¥264,011.5	¥845.2	-¥11,258.7	¥253,598.0	¥277,106.4	52.2%		
18	2012	¥253,598.0	¥811.9	-¥10,814.6	¥243,595.3	¥288,808.2	54.2%		
19	2013	¥243,595.3	¥779.9	-¥10,388.0	¥233,987.1	¥300,120.9	56.2%		
20	2014	¥233,987.1	¥749.1	-¥9,978.3	¥224,757.9	¥311,060.0	58.1%		
21	2015	¥224,757.9	¥719.6	-¥9,584.7	¥215,892.8	¥321,640.6	59.8%		
22	2016	¥215,892.8	¥691.2	-¥9,206.7	¥207,377.3	¥331,877.0	61.5%		
		Growth Rates	-3.94%	-3.94%	-3.94%	13.26%			
		Count (Years)	22	22	22	22			

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)	BOJ Intermediation Expense <sup>2</sup>	GDP Year (End) (¥ Billions)	Growth Rates	Count (Years)	
								1
2	1996	¥504,245.4	¥1,614.3	¥0.0	¥505,859.7			
3	1997	¥505,859.7	¥1,619.5	¥0.0	¥507,479.2			
4	1998	¥507,479.2	¥1,624.7	¥0.0	¥509,103.9			
5	1999	¥509,103.9	¥1,629.9	¥0.0	¥510,733.8			
6	2000	¥510,733.8	¥1,635.1	¥0.0	¥512,369.0			
7	2001	¥512,369.0	¥1,640.4	¥0.0	¥514,009.3			
8	2002	¥514,009.3	¥1,645.6	¥0.0	¥515,654.9			
9	2003	¥515,654.9	¥1,650.9	¥0.0	¥517,305.8			
10	2004	¥517,305.8	¥1,656.2	¥0.0	¥518,961.9			
11	2005	¥518,961.9	¥1,661.5	¥0.0	¥520,623.4			
12	2006	¥520,623.4	¥1,666.8	¥0.0	¥522,290.2			
13	2007	¥522,290.2	¥1,672.1	¥0.0	¥523,962.3			
14	2008	¥523,962.3	¥1,677.5	¥0.0	¥525,639.8			
15	2009	¥525,639.8	¥1,682.8	¥0.0	¥527,322.6			
16	2010	¥527,322.6	¥1,688.2	¥0.0	¥529,010.8			
17	2011	¥529,010.8	¥1,693.6	¥0.0	¥530,704.5			
18	2012	¥530,704.5	¥1,699.1	¥0.0	¥532,403.5			
19	2013	¥532,403.5	¥1,704.5	¥0.0	¥534,108.0			
20	2014	¥534,108.0	¥1,709.9	¥0.0	¥535,818.0			
21	2015	¥535,818.0	¥1,715.4	¥0.0	¥537,533.4			
22	2016	¥537,533.4	¥1,720.9	¥0.0	¥539,254.3			
		Growth Rates	0.32%	0.32%	N.A.	0.32%		
		Count (Years)	22	22	22	22		

## 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 4.

3-Initial GDP from Attachment 4 via Cabinet Office, Annual Nominal, Fiscal Year GDP at

[http://www.esri.cao.go.jp/en/sna/sokuhou/sokuhou\\_top.html](http://www.esri.cao.go.jp/en/sna/sokuhou/sokuhou_top.html) Download Date: 1/12/2018

4-BOJ M1 monetary intermediation expense compounded at total growth rate.

BOJ Monetary Intermediation Cost 1995-2016	¥ Billions	% Percent
Economic (GDP) earnings 2016 w/o BOJ intermediation expense	¥539,254.3	100.0%
Economy earnings with BOJ Intermediation expense deducted	¥207,377.3	38.5%
BOJ Intermediation Expense to Non Bank Economy since 1995	¥331,877.0	61.5%

Bank of Japan Intermediation costs, primarily monetary expansion inflation, estimated to have wealth transferred approximately 61.5% of economic system returns to banking sector from 1995 to 2016.

## Bank of Japan Monetary Intermediation Cost

Japanese Commercial Banks Non-Consolidated Conversion Estimate<sup>1</sup>

March 31, 2017

(¥ Millions)

## I. Conversion to 100% Reserve Demand Deposits

March 31, 2017

ASSETS	Existing	Funds Transfers	Converted Form	% Deposits
	(Before)	→	(After)	
	(¥ Millions)	→	DEMAND SECTION	
CASH				
Cash and due from banks	¥209,702,255	¥614,059,794	¥823,762,049	100.0%
Total Cash	¥209,702,255	¥614,059,794	¥823,762,049	

## JAPANESE GOVERNMENT SECURITIES → NON-DEMAND SECTION

Trading Government Bond Securities <sup>2</sup>	¥13,477	-¥13,477	¥0	
Government Bond Securities <sup>2</sup>	¥79,978,223	-¥79,978,223	¥0	
Total Japanese Gov't Securities	¥79,991,700	-¥79,991,700	¥0	

## INVESTMENTS →

Receivables under resale agreements	¥1,567,120	¥0	¥1,567,120	
Receivables under securities borrowing transactions	¥9,446,561	¥0	¥9,446,561	
Bills bought	¥0	¥0	¥0	
Monetary claims bought	¥6,964,094	¥0	¥6,964,094	
Trading assets	¥13,845,245	¥0	¥13,845,245	
Trading account securities, net trading gov't bonds	¥59,321	¥0	¥59,321	
Securities, net of government bonds	¥137,798,656	¥0	¥137,798,656	
LESS: Allowances for investment losses	-¥30,694	¥0	-¥30,694	
Total Investments	¥169,650,303	¥0	¥169,650,303	

## LOANS AND LEASES →

Call Loans	¥4,808,723	¥0	¥4,808,723	
Loans and bills discounted	¥551,393,554	¥0	¥551,393,554	
LESS: Allowance for loan losses	-¥3,356,448	¥0	-¥3,356,448	
Total Loans	¥552,845,829	¥0	¥552,845,829	

## OTHER ASSETS →

Money held in trust	¥786,159	¥0	¥786,159	
Foreign exchanges	¥5,861,890	¥0	¥5,861,890	
Other assets	¥20,400,611	¥0	¥20,400,611	
Tangible fixed assets (Land, Buildings & Leases) <sup>4</sup>	¥6,638,285	¥0	¥6,638,285	
Intangible fixed assets	¥1,978,069	¥0	¥1,978,069	
Prepaid pension cost	¥1,999,806	¥0	¥1,999,806	
Deferred tax and other deferred assets	¥138,105	¥0	¥138,105	
Customers' liabilities for acceptances & guarantees	¥22,499,215	¥0	¥22,499,215	
Total Other Assets	¥60,302,140	¥0	¥60,302,140	

## LIABILITIES &amp; EQUITY

## DEPOSITS (CASH EQUIVALENTS) → DEMAND SECTION

Deposits <sup>3</sup>	¥768,609,934	¥0	¥768,609,934	
Negotiable certificates of deposit <sup>3</sup>	¥55,152,115	¥0	¥55,152,115	
Total Deposits	¥823,762,049	¥0	¥823,762,049	

## BORROWINGS → NON-DEMAND SECTION

Debentures	¥127,221	¥0	¥127,221	
Call money	¥7,890,079	¥0	¥7,890,079	
Payables under repurchase agreements	¥19,893,705	¥0	¥19,893,705	
Payables under securities lending transactions	¥19,329,469	¥0	¥19,329,469	
Bills sold	¥0	¥0	¥0	
Commercial papers	¥4,381,018	¥0	¥4,381,018	
Borrowed money	¥56,134,450	¥0	¥56,134,450	
Short-term bonds payable	¥658,861	¥0	¥658,861	
Bonds payable <sup>4</sup>	¥13,775,792	¥0	¥13,775,792	
Bonds with subscription rights to shares	¥167,357	¥0	¥167,357	
Borrowed money from trust account	¥14,490,563	¥0	¥14,490,563	
Total Borrowings	¥136,848,515	¥0	¥136,848,515	

## OTHER LIABILITIES →

Bonded Debt to Japanese Government <sup>5</sup>	¥0	¥534,068,094	¥534,068,094	
Trading Liabilities (Securities & derivatives)	¥9,881,748	¥0	¥9,881,748	
Foreign exchanges	¥3,915,593	¥0	¥3,915,593	
Other Liabilities <sup>6</sup>	¥17,435,973	¥0	¥17,435,973	
Provisions for bonuses & benefits	¥520,489	¥0	¥520,489	
Other Allowance	¥396,802	¥0	¥396,802	
Deferred tax and other deferred liabilities <sup>3</sup>	¥2,716,663	¥0	¥2,716,663	
Acceptances & guarantees	¥22,499,215	¥0	¥22,499,215	
Total Other Liabilities	¥57,366,483	¥534,068,094	¥591,434,577	
Total Liabilities	¥1,017,977,047	¥534,068,094	¥1,552,045,141	

## NET ASSETS/EQUITY →

Shareholder Net Assets/Equity	¥54,515,143	¥0	¥54,515,143	
Total Net Assets/Equity	¥54,515,143	¥0	¥54,515,143	
Total Liabilities & Equity/Capital	¥1,072,492,190	¥534,068,094	¥1,606,560,284	
Equity to Assets Ratio	5.08%		3.39%	

## NOTES Totals may not equal sum of components due to source spreadsheet.

1-Non-consolidated balance sheet used because it provided more government bond holdings detail than consolidated statement. Rounding errors are from source spreadsheet.

2-Japanese government securities would be retired as a book entry and netted with borrowing from government required to fully reserve and fund cash demand deposit accounts.

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

4-Start-up for depository locations and FF&amp;E estimated % of Tangible fixed assets (Land, Buildings &amp; Leases) at

50.0%

Match fund w/bonds payable liability.

5-Bonded debt to Japanese government at market rate for equivalent secured debt and repaid as loans payoff, est. at 0.25% premium over Treasuries or risk free rate (r<sub>f</sub>) but not less than zero.

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-Japanese Bankers Association FY2016 Financial Statements of

All Banks, Each Category of Bank, Balance sheets All Banks

Non-Consolidated (March 31, 2017) - [Fiscal Year 2016] at

<https://www.zenginkyo.or.jp/en/stats/year2-01/><https://www.zenginkyo.or.jp/en/stats/year2-01/2016-terminal/>Commercial Bank Debt to Japanese Government from conversion to 100% Reserve Demand Deposits<sup>6</sup>

(¥ Millions)	For Week Ending	3/31/2017
Commercial Bank Deposits (Assumed all Demand)		¥823,762,049
Less: Cash and due from banks		-¥209,702,255
Less: Japanese Government Securities Holdings Retired		-¥79,991,700
Bonded Debt to Japanese Government from Funding 100% Demand Deposit Conversion		¥534,068,094
Source: Japanese Bankers Assn FY2016 Fin Stmt All Banks, Each Category Bank, Bal sheet All Banks (3/31/2017)		

## II. Split into Deposit Only and Commercial Banks

March 31, 2017

Depositor Owned	Commercial	Reconciliation
Depository	Intermediary	Total
DEMAND SECTION	NON-DEMAND SECTION	
¥823,762,049	¥0	¥823,762,049
¥823,762,049	¥0	¥823,762,049

## NON-DEMAND SECTION

	¥0	¥0
	¥0	¥0
¥0	¥0	¥0

## NON-DEMAND SECTION

	¥1,567,120	¥1,567,120
	¥9,446,561	¥9,446,561
	¥0	¥0
	¥6,964,094	¥6,964,094
	¥13,845,245	¥13,845,245
	¥59,321	¥59,321
	¥137,798,656	¥137,798,656
	-¥30,694	-¥30,694
¥0	¥169,650,303	¥169,650,303

## NON-DEMAND SECTION

	¥4,808,723	¥4,808,723
	¥551,393,554	¥551,393,554
	-¥3,356,448	-¥3,356,448
¥0	¥552,845,829	¥552,845,829

## NON-DEMAND SECTION

	¥786,159	¥786,159
	¥5,861,890	¥5,861,890
	¥20,400,611	¥20,400,611
Start-up (Est.) <sup>4</sup>	¥3,319,143	¥6,638,285
	¥1,978,069	¥1,978,069
	¥1,999,806	¥1,999,806
	¥138,105	¥138,105
	¥22,499,215	¥22,499,215
	¥60,302,140	¥60,302,140
¥3,319,143	¥56,982,998	¥60,302,140

## NON-DEMAND SECTION

## DEMAND SECTION

¥768,609,934		¥768,609,934
¥55,152,115		¥55,152,115
¥823,762,049	¥0	¥823,762,049

## NON-DEMAND SECTION

	¥127,221	¥127,221
	¥7,890,079	¥7,890,079
	¥19,893,705	¥19,893,705
	¥19,329,469	¥19,329,469
	¥0	¥0
	¥4,381,018	¥4,381,018
	¥56,134,450	¥56,134,450
	¥658,861	¥658,861
For Start-up <sup>4</sup>	¥3,319,143	¥10,456,650
	¥167,357	¥167,357
	¥14,490,563	¥14,490,563
¥3,319,143	¥133,529,373	¥136,848,515

## NON-DEMAND SECTION

	¥534,068,094	¥534,068,094
	¥9,881,748	¥9,881,748
	¥3,915,593	¥3,915,593
	¥17,435,973	¥17,435,973
	¥520,489	¥520,489
	¥396,802	¥396,802
	¥2,716,663	¥2,716,663
	¥22,499,215	¥22,499,215
	¥591,434,577	¥591,434,577
¥0	¥724,963,950	¥1,552,045,141

## NON-DEMAND SECTION

	¥54,515,143	¥54,515,143
¥0	¥54,515,143	¥54,515,143
¥827,081,192	¥779,479,093	¥1,606,560,284
0.00%	6.99%	3.39%

## Bank of Japan Monetary Intermediation Cost

## Sample Japanese Bank Conversion Estimate

Mitsubishi UFJ Financial Group, Inc. and Subsidiaries<sup>1</sup>

March 31, 2017

¥ Millions)

## I. Conversion to 100% Reserve Demand Deposits

March 31, 2017

ASSETS	I. Conversion to 100% Reserve Demand Deposits			% Deposits
	Existing (Before) (¥ Millions)	Funds Transfers →	Converted Form (After) →	
<b>CASH</b>				
Cash and cash equivalents	¥25,682,741	¥126,391,853	¥152,074,594	→
Interest earning deposits at other banks	¥38,327,029	¥0	¥38,327,029	→
Total Cash	¥64,009,770	¥126,391,853	¥190,401,623	100.0%
<b>JAPANESE GOVERNMENT SECURITIES</b>				
Gov't & agency debt securities, available for sale <sup>2</sup>	¥25,826,288	¥25,826,288	¥0	→
Gov't & agency debt securities, held for maturity <sup>2</sup>	¥1,100,955	¥1,100,955	¥0	→
Total Japanese Gov't Securities	¥26,927,243	¥26,927,243	¥0	→
<b>INVESTMENTS</b>				
Call loans and funds sold	¥704,237	¥0	¥704,237	→
Receivables under resale agreements	¥8,188,146	¥0	¥8,188,146	→
Receivables under securities borrowing transactions	¥11,002,724	¥0	¥11,002,724	→
Trading assets (may contain nat'l gov't securities)	¥41,320,049	¥0	¥41,320,049	→
Investment securities, net nat'l gov't available for sale	¥13,263,811	¥0	¥13,263,811	→
Investment securities, net nat'l gov't held for maturity	¥2,486,366	¥0	¥2,486,366	→
Other investment securities	¥556,161	¥0	¥556,161	→
Total Investments	¥77,521,494	¥0	¥77,521,494	→
<b>LOANS</b>				
Loans, net of unearned income, premiums & fees	¥118,214,972	¥0	¥118,214,972	→
LESS: Allowance for credit losses	¥1,182,188	¥0	¥1,182,188	→
Total Loans	¥117,032,784	¥0	¥117,032,784	→
<b>OTHER ASSETS</b>				
Premises and equipment <sup>7</sup>	¥994,271	¥0	¥994,271	→
Accrued interest	¥281,752	¥0	¥281,752	→
Customers' acceptance liability	¥156,208	¥0	¥156,208	→
Intangible fixed assets	¥1,020,359	¥0	¥1,020,359	→
Goodwill	¥450,143	¥0	¥450,143	→
Deferred tax assets	¥76,452	¥0	¥76,452	→
Other assets	¥8,714,543	¥0	¥8,714,543	→
Total Other Assets	¥11,693,728	¥0	¥11,693,728	→
Total Assets	¥297,185,019	¥99,464,610	¥396,649,629	→
<b>LIABILITIES &amp; EQUITY</b>				
<b>DEPOSITS (ALL TYPES, DEMAND &amp; TIME)</b>				
DEMAND SECTION				
Domestic Non-interest bearing deposits <sup>3,4</sup>	¥23,098,886	¥0	¥23,098,886	→
Domestic Interest bearing deposits <sup>3,4</sup>	¥121,741,545	¥0	¥121,741,545	→
Overseas Non-interest bearing deposits <sup>3,4</sup>	¥6,387,219	¥0	¥6,387,219	→
Overseas Interest bearing deposits <sup>3,4</sup>	¥39,173,973	¥0	¥39,173,973	→
Total Deposits	¥190,401,623	¥0	¥190,401,623	→
<b>BORROWINGS</b>				
NON-DEMAND SECTION				
Call money and funds purchased	¥1,974,977	¥0	¥1,974,977	→
Payables under repurchase agreements	¥16,081,499	¥0	¥16,081,499	→
Payables under securities lending transactions	¥5,549,004	¥0	¥5,549,004	→
Other short term borrowings	¥7,969,521	¥0	¥7,969,521	→
Long term debt <sup>7</sup>	¥27,743,443	¥0	¥27,743,443	→
Total Borrowings	¥59,318,444	¥0	¥59,318,444	→
<b>OTHER LIABILITIES</b>				
Bonded Debt to Japanese Government <sup>5</sup>	¥0	¥99,464,610	¥99,464,610	→
Due to trust account	¥3,335,155	¥0	¥3,335,155	→
Obligations to return securities received as collateral	¥3,516,232	¥0	¥3,516,232	→
Trading account liabilities	¥18,790,133	¥0	¥18,790,133	→
Bank acceptances outstanding	¥156,208	¥0	¥156,208	→
Accrued interest	¥147,351	¥0	¥147,351	→
Other liabilities <sup>6</sup>	¥6,755,165	¥0	¥6,755,165	→
Total Other Liabilities	¥32,700,244	¥99,464,610	¥132,164,854	→
Total Liabilities	¥282,420,311	¥99,464,610	¥381,884,921	→
<b>EQUITY</b>				
Shareholder equity	¥14,764,708	¥0	¥14,764,708	→
Total Equity	¥14,764,708	¥0	¥14,764,708	→
Total Liabilities & Equity	¥297,185,019	¥99,464,610	¥396,649,629	→
Equity to Assets Ratio	4.97%	→	3.72%	→

II. Split into Deposit Only and Commercial Bank		
(¥ Millions)	(¥ Millions)	(¥ Millions)
Depositor Owned Depository	Commercial Intermediary	Reconciliation Total
DEMAND SECTION		
¥152,074,594	¥0	¥152,074,594
¥38,327,029	¥0	¥38,327,029
¥190,401,623	¥0	¥190,401,623
NON-DEMAND SECTION		
¥0	¥0	¥0
¥0	¥0	¥0
¥0	¥0	¥0
¥704,237	¥704,237	¥704,237
¥8,188,146	¥8,188,146	¥8,188,146
¥11,002,724	¥11,002,724	¥11,002,724
¥41,320,049	¥41,320,049	¥41,320,049
¥13,263,811	¥13,263,811	¥13,263,811
¥2,486,366	¥2,486,366	¥2,486,366
¥556,161	¥556,161	¥556,161
¥0	¥77,521,494	¥77,521,494
¥118,214,972	¥118,214,972	¥118,214,972
¥1,182,188	¥1,182,188	¥1,182,188
¥0	¥117,032,784	¥117,032,784
¥497,136	¥497,136	¥994,271
¥281,752	¥281,752	¥281,752
¥156,208	¥156,208	¥156,208
¥1,020,359	¥1,020,359	¥1,020,359
¥450,143	¥450,143	¥450,143
¥76,452	¥76,452	¥76,452
¥8,714,543	¥8,714,543	¥8,714,543
¥497,136	¥11,196,593	¥11,693,728
¥190,898,759	¥205,750,871	¥396,649,629
DEMAND SECTION		
¥23,098,886	¥23,098,886	¥23,098,886
¥121,741,545	¥121,741,545	¥121,741,545
¥6,387,219	¥6,387,219	¥6,387,219
¥39,173,973	¥39,173,973	¥39,173,973
¥190,401,623	¥0	¥190,401,623
NON-DEMAND SECTION		
¥1,974,977	¥1,974,977	¥1,974,977
¥16,081,499	¥16,081,499	¥16,081,499
¥5,549,004	¥5,549,004	¥5,549,004
¥7,969,521	¥7,969,521	¥7,969,521
¥497,136	¥27,246,308	¥27,743,443
¥497,136	¥58,821,309	¥59,318,444
¥99,464,610	¥99,464,610	¥99,464,610
¥3,335,155	¥3,335,155	¥3,335,155
¥3,516,232	¥3,516,232	¥3,516,232
¥18,790,133	¥18,790,133	¥18,790,133
¥156,208	¥156,208	¥156,208
¥147,351	¥147,351	¥147,351
¥6,755,165	¥6,755,165	¥6,755,165
¥0	¥132,164,854	¥132,164,854
¥190,898,759	¥190,986,163	¥381,884,921
¥0	¥14,764,708	¥14,764,708
¥0	¥14,764,708	¥14,764,708
¥190,898,759	¥205,750,871	¥396,649,629
Equity to Assets Ratio	0.00%	3.72%

## NOTES

- Mitsubishi UFJ Financial Group, Inc. considered representative bank. Conversion into a depositor owned depository and intermediation bank is a general estimation.
- Japanese government securities would be retired as a book entry and netted with borrowing from government required to fully reserve and fund cash demand deposit accounts.
- All types deposits treated as demand deposits and reserved 100%.
- Savings accounts at Mitsubishi UFJ Financial Group converted to time deposits such as CD's or transferred to new Depository within a reasonable transition period, say up to three months.
- Bonded debt to Japanese government at market rate for equivalent secured debt and repaid as loans payoff, est. at 0.25% premium over Treasuries or risk free rate (r<sub>f</sub>) but not less than zero.
- Some "Other Liabilities" may be considered demand liabilities, in which case they would require 100% reserves also and transfer to the new Depository Institution.
- Start-up for depository locations & FF&E estimated % of Premises & equipment at **50.0%** Match fund w/Borrowings Long term debt liability.

## SOURCE:

- Mitsubishi UFJ Financial Group Annual Report Fiscal Year Ended Mar. 2017, Annual Report (USGAAP) PDF (1.71MB) pp. F-4 to F-5 (pp. 251-252 of PDF) at <http://www.mufg.jp/english/ir/annualreport/>  
<http://www.mufg.jp/english/ir/annualreport/2017mufg/pdf/mar/ar2017.pdf>

## Bank of Japan Monetary Intermediation Cost

Bank of Japan (BOJ) Conversion Estimate<sup>1</sup>

March 31, 2017

(¥ Millions)

## I. Conversion to 100% Reserve Demand Deposits

March 31, 2017

ASSETS	Existing	Funds Transfers	Converted Form	
	(Before)	→	(After)	
	→		DEMAND SECTION	
	(¥ Millions)			
<b>CASH EQUIVALENTS</b>				
Gold	¥441,253	¥0	¥441,253	
Cash	¥203,112	¥377,485,219	¥377,688,330	% DD Deposits
<b>Total Cash</b>	¥644,365	¥377,485,219	¥378,129,584	100.0%
<b>JAPANESE GOVERNMENT SECURITIES</b>				
Japanese government securities <sup>2</sup>	¥417,711,474	-¥417,711,474	¥0	
<b>Total Japanese Gov't Securities</b>	¥417,711,474	-¥417,711,474	¥0	
<b>INVESTMENTS</b>				
Commercial paper <sup>3</sup>	¥2,035,735	¥0	¥2,035,735	
Corporate bonds <sup>3</sup>	¥3,214,429	¥0	¥3,214,429	
Pecuniary trusts (stocks held as trust property) <sup>3</sup>	¥1,188,484	¥0	¥1,188,484	
Pecuniary trusts (indexed ETFs held as trust property)	¥12,935,375	¥0	¥12,935,375	
Pecuniary trusts (Japan REITs held as trust property)	¥382,248	¥0	¥382,248	
Foreign currency assets <sup>3</sup>	¥6,608,111	¥0	¥6,608,111	
<b>Total Investments</b>	¥26,364,382	¥0	¥26,364,382	
<b>LOANS</b>				
Loans and bills discounted <sup>3</sup>	¥44,664,568	¥0	¥44,664,568	
<b>Total Loans</b>	¥44,664,568	¥0	¥44,664,568	
<b>OTHER ASSETS</b>				
Deposits with agents	¥20,557	¥0	¥20,557	
Tangible fixed assets	¥201,053	¥0	¥201,053	
Intangible fixed assets	¥128	¥0	¥128	
Other Assets <sup>3</sup>	¥482,818	¥0	¥482,818	Start-up(Est.) <sup>7</sup>
<b>Total Other Assets</b>	¥704,556	¥0	¥704,556	
<b>Total Assets</b>	¥490,089,345	-¥40,226,255	¥449,863,090	<b>Total Assets</b>
<b>LIABILITIES &amp; EQUITY</b>				
<b>DEPOSITS - JAPANESE GOVERNMENT</b>				
Treasury deposits	¥150,000	¥0	¥150,000	
Domestic designated deposits	¥21,348,834	¥0	¥21,348,834	
Other government deposits	¥251,898	¥0	¥251,898	
<b>Total Japanese Government Deposits<sup>6</sup></b>	¥21,750,733	¥0	¥21,750,733	
<b>DEPOSITS - NON-JAPANESE GOVERNMENT<sup>6</sup></b>				
Current deposits - other financial institutions	¥342,755,515	¥0	¥342,755,515	
Other deposits - foreign central banks and others	¥13,623,336	¥0	¥13,623,336	
<b>Total Non-Japanese Government Deposits<sup>6</sup></b>	¥356,378,851	¥0	¥356,378,851	
<b>Total Deposits</b>	¥378,129,584	¥0	¥378,129,584	
<b>NON-DEPOSIT LIABILITIES<sup>6</sup></b>				
Banknotes <sup>2</sup>	¥99,800,188	-¥99,800,188	¥0	
Bonded Debt to Japanese Government <sup>5</sup>	¥0	¥59,573,932	¥59,573,932	
Payables under repurchase agreements	¥3,425,244	¥0	¥3,425,244	
Provision for retirement benefits	¥198,088	¥0	¥198,088	
Provision for possible losses on bond transactions	¥3,155,020	¥0	¥3,155,020	
Provision for possible losses on foreign exchange transactions	¥1,507,875	¥0	¥1,507,875	
Other liabilities <sup>4</sup>	¥207,457	¥0	¥207,457	For Start-up <sup>7</sup>
<b>Total Non-Deposit Liabilities</b>	¥108,293,872	-¥40,226,255	¥68,067,617	
<b>Total Liabilities</b>	¥486,423,455	-¥40,226,255	¥446,197,200	<b>Total Liabilities</b>
<b>EQUITY/CAPITAL</b>				
Capital and Net Income	¥506,791	¥0	¥506,791	
Reserves (Legal & Special)	¥3,159,098	¥0	¥3,159,098	
<b>Total Capital/Equity</b>	¥3,665,889	¥0	¥3,665,889	<b>Total Capital</b>
<b>Total Liabilities &amp; Equity/Capital</b>	¥490,089,345	-¥40,226,255	¥449,863,090	
Equity to Assets Ratio	0.75%		0.81%	

## II. Split into Deposit Only and Commerce Ministry

March 31, 2017

[Ministry of Economy, Trade and Industry]

Ministry Finance	Ministry of ET/	Reconciliation
Depository	Sunset <sup>7</sup>	Total
DEMAND SECTION		
¥441,253		
¥21,309,479	¥356,378,851	¥377,688,330
¥21,750,733	¥356,378,851	¥378,129,584
	¥0	¥0
¥0	¥0	¥0
	¥2,035,735	¥2,035,735
	¥3,214,429	¥3,214,429
	¥1,188,484	¥1,188,484
	¥12,935,375	¥12,935,375
	¥382,248	¥382,248
	¥6,608,111	¥6,608,111
¥0	¥26,364,382	¥26,364,382
	¥44,664,568	¥44,664,568
¥0	¥44,664,568	¥44,664,568
	\$20,557	\$20,557
	\$201,053	\$201,053
	\$128	\$128
¥0	\$482,818	\$482,818
¥0	\$704,556	\$704,556
¥21,750,733	\$428,112,357	\$449,863,090
<b>GOVT DEPOSITS</b>		
¥150,000		¥150,000
¥21,348,834		¥21,348,834
¥251,898		¥251,898
¥21,750,733	¥0	¥21,750,733
	<b>NON-GOVT DEPOSITS</b>	
	¥342,755,515	¥342,755,515
	¥13,623,336	¥13,623,336
¥0	¥356,378,851	¥356,378,851
¥21,750,733	¥356,378,851	¥378,129,584
	¥0	¥0
	¥59,573,932	¥59,573,932
	¥3,425,244	¥3,425,244
	¥198,088	¥198,088
	¥3,155,020	¥3,155,020
	¥1,507,875	¥1,507,875
¥0	¥207,457	¥207,457
¥0	¥68,067,617	¥68,067,617
¥21,750,733	¥424,446,468	¥446,197,200
	¥506,791	¥506,791
	¥3,159,098	¥3,159,098
	¥3,665,889	¥3,665,889
¥21,750,733	¥428,112,357	¥449,863,090
	0.86%	0.81%

## NOTES

1-General estimation of Bank of Japan conversion into a Ministry of Finance Depository and remaining sunseting bank operated by appropriate governmental Ministry.

2-Japanese Government Securities Holdings would be credited and retired against Bank of Japan Banknotes which would be exchanged for new non-debt Japanese Bills.

3-Investment sales and loan payoffs and would be credited to Japanese 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 Finance Ministry Deposit Institution.

5-Bonded debt to Japanese government at market rate for equivalent secured debt and repaid as loans payoff, est. at risk free rate (r<sub>f</sub>), but not less than zero, plus a risk premium of 0.25%.

6-All types deposits reserved 100%.

7-Remaining operations of BOJ would sunset and close. Loan payoffs would be credited to government debt and retired. Any remaining assets at the time of closure would be divided to the remaining ownership.

## SOURCE:

1-Bank of Japan 2017 Annual Review (Fiscal 2016) Balance Sheets pp. 63-64 at

<http://www.boj.or.jp/en/about/activities/act/index.htm/>Bank of Japan Statement Change from conversion to 100% Demand Deposits<sup>1</sup>

(¥ Millions)	For Period Ending	3/31/2017
Bank of Japan Banknotes (currency) Retired & Replaced with Japanese Bills		¥99,800,188
Plus: Cash Equivalents Needed to cover Deposit Liabilities (Assumed all Demand)		¥377,485,219
Less: Japanese Government Securities Holdings Retired		-¥417,711,474
Bonded Debt to Japanese Government from Funding 100% Demand Deposit Conversion		¥59,573,932
<b>Source:</b> Bank of Japan 2017 Annual Review (Fiscal 2016) Balance Sheet p. 64.		

## Attachment 6(d)

## Bank of Japan Monetary Intermediation Cost

## Japanese Central Government Balance Sheet

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

March 31, 2016

Fiscal Year 2015<sup>b</sup>

I. Conversion Retiring Fed Debt Holdings at Book			
March 31, 2016			
ASSETS	Existing (Before) (¥ Millions)	Funds Transfers →	Converted Form (After) (¥ Millions)
<b>CURRENT ASSETS</b>			
Cash and deposit	¥52,267,723	¥0	¥52,267,723
Securities	¥124,763,559	¥0	¥124,763,559
Inventories	¥4,446,127	¥0	¥4,446,127
Accounts receivable	¥5,811,622	¥0	¥5,811,622
Accrued income	¥742,119	¥0	¥742,119
Accrued insurance premiums	¥4,702,633	¥0	¥4,702,633
Prepaid expenses	¥3,056,691	¥0	¥3,056,691
Money in trust	¥106,565,114	¥0	¥106,565,114
Other credits	¥3,097,927	¥0	¥3,097,927
Total Current Assets	¥305,453,515	¥0	¥305,453,515
<b>INVESTMENTS</b>			
Bonded Debt to Japanese Gov't from Conversion <sup>c</sup>	¥0	¥593,642,026	¥593,642,026
Loans	¥116,203,995	¥0	¥116,203,995
Investments	¥71,907,631	¥0	¥71,907,631
Allowance for doubtful	¥1,920,054	¥0	¥1,920,054
Total Investments	¥186,191,572	¥593,642,026	¥779,833,598
<b>OTHER ASSETS</b>			
Tangible fixed assets	¥180,465,316	¥0	¥180,465,316
Intangible fixed assets	¥249,497	¥0	¥249,497
Total Other Assets	¥180,714,813	¥0	¥180,714,813
<b>Total Assets</b>	<b>¥672,359,900</b>	<b>¥593,642,026</b>	<b>¥1,266,001,926</b>
<b>LIABILITIES &amp; EQUITY</b>			
<b>CURRENT LIABILITIES</b>			
Accounts payable	¥10,146,649	¥0	¥10,146,649
Reserves claims	¥299,438	¥0	¥299,438
Accrued liabilities	¥1,336,789	¥0	¥1,336,789
Money in custody	¥766,352	¥0	¥766,352
Advance received	¥56,046	¥0	¥56,046
Differed revenues	¥1,816	¥0	¥1,816
Money on deposit	¥5,565,434	¥0	¥5,565,434
Total Current Liabilities	¥18,172,524	¥0	¥18,172,524
<b>OTHER LIABILITIES</b>			
Prepaid insurance premiums	¥134,866	¥0	¥134,866
Allowance for bonus payment	¥308,403	¥0	¥308,403
Liability Reserves	¥9,740,999	¥0	¥9,740,999
Deposit reserved for public pension	¥115,868,808	¥0	¥115,868,808
Allowance for retirement benefits	¥7,684,557	¥0	¥7,684,557
Other liabilities	¥7,515,598	¥0	¥7,515,598
Total Operational Liabilities	¥141,253,231	¥0	¥141,253,231
<b>GOVERNMENT DEBT LIABILITIES</b>			
Federal debt held by the Bank of Japan <sup>d,2</sup>	¥417,711,474	¥-417,711,474	¥0
Federal debt held by commercial banks <sup>d,3</sup>	¥79,991,700	¥-79,991,700	¥0
Federal debt remaining (Bills, bonds & borrowings)	¥536,034,735	¥0	¥536,034,735
Total Government Debt Liabilities	¥1,033,737,909	¥-497,703,174	¥536,034,735
<b>Total liabilities</b>	<b>¥1,193,163,664</b>	<b>¥-497,703,174</b>	<b>¥695,460,490</b>
<b>EQUITY/CAPITAL (Net Position)</b>			
Net Financial Assets (Total Assets - Total Liabilities)	¥-520,803,764	¥1,091,345,200	¥570,541,436.44
<b>Total net position (Capital Shortage/Equity Gap)</b>	<b>¥-520,803,764</b>	<b>¥1,091,345,200</b>	<b>¥570,541,436</b>
<b>Total Liabilities &amp; Equity/Capital</b>	<b>¥672,359,900</b>	<b>¥593,642,026</b>	<b>¥1,266,001,926</b>
Equity to Assets Ratio	-77.46%		45.07%

Totals may not equal sum of components due to rounding.

## NOTES

a-General estimation of financial impact of converting to 100% reserve system retiring Japanese federal government debt holdings. (Not all dates match so general purposes only)

b-Japanese government's financial year runs from April 1st to March 31st. Fiscal Year (FY) 2015 ended March 31, 2016.

c-Initial seigniorage, first use new money creation, allocated to government to loan for 100% funding of commercial bank demand deposits. Bank debt to Japanese Government est. at 0.25% premium over risk free rate (r) [net GDP growth rate] secured by Loan Assets and/or other assets and would be repaid as loans payoff. Subsequent seigniorage to be 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.

d-Federal debt holdings by BOJ and Commercial Banks would be retired as a book entry and netted with bank borrowing required to fully fund Japanese Bill cash demand deposit accounts.

## SOURCE:

1-Ministry of Finance Japan 2017 Debt Management Report published January 27, 2017 Appendices Supplement (16) Balance Sheet of Japanese Government

(General Account and Special Accounts) (as of the end of FY2015 3/31/2016) p.185 at [http://www.mof.go.jp/english/igs/publication/debt\\_management\\_report/2017/index.html](http://www.mof.go.jp/english/igs/publication/debt_management_report/2017/index.html)[http://www.mof.go.jp/english/igs/publication/debt\\_management\\_report/index.htm](http://www.mof.go.jp/english/igs/publication/debt_management_report/index.htm)[http://www.mof.go.jp/english/igs/publication/debt\\_management\\_report/2017/saimu.pdf](http://www.mof.go.jp/english/igs/publication/debt_management_report/2017/saimu.pdf)<http://www.mof.go.jp/english/e-service/index.htm>

Japanese Government Debt (Before Conversion)			
(¥ Millions)	As of	3/31/2016	% Total
Financing bills		¥86,382,309	8.4%
Government bonds		¥917,473,470	88.8%
Borrowings		¥29,882,130	2.9%
Total Japanese Government Debt		¥1,033,737,909	100.0%

Japanese Government Debt (After Conversion)			
(¥ Millions)	As of	3/31/2016	% Total
Total Japanese Fed Government Debt		¥1,033,737,909	100.0%
- Fed debt held by the BOJ retired <sup>c,2</sup>		¥-417,711,474	-40.4%
- Fed debt held by com. banks retired <sup>c,3</sup>		¥-79,991,700	-7.7%
- Bank debt to Gov't from conversion <sup>b</sup>		¥-534,068,094	-51.7%
- BOJ debt to Gov't from Conversion <sup>b</sup>		¥-59,573,932	-5.8%
Japanese Gov't Debt after conversion		¥-57,607,291	-5.6%
Total Japanese Gov't Debt Retired		¥1,091,345,200	105.6%

Commercial bank & BOJ monetary debt to Japanese government from conversion to 100% reserve deposit accounts			
(¥ Millions)	For Week Ending	3/31/2017	% Total
Commercial bank debt to Japanese Gov't from funding 100% demand deposit conversion - A-6(a)		¥534,068,094	90.0%
Bank of Japan (BOJ) debt to Japanese Government from Monetary Conversion - Attachment 6(c)		¥59,573,932	10.0%
Commercial Bank & BOJ debt to Japanese Gov't from Funding 100% demand deposit conversion		¥593,642,026	100.0%
Source: Attachment 6(a) Japanese Commercial Banks Consolidated Conversion & 6(c) Bank of Japan Conversion			

## Attachment 7

# Bank of Japan Monetary Intermediation Cost Japanese Central Government Debt<sup>1</sup>

As of March 31, 2017

(¥ Million Yen)

1. Outstanding Government Bonds and Borrowings (¥ Million Yen)	FY 2016	FY2015	
	3/31/2017 Amount (¥ Millions)	Change (+/-) from Previous Fiscal Year (¥ Millions)	3/31/2016 Amount (¥ Millions)
<b>General Bonds</b>			
Long-term (10 years or more)	¥610,823,000	¥36,033,000	¥574,790,000
Medium-term (2 to 5 years)	¥186,776,400	-¥7,657,800	¥194,434,200
Short-term (one year or less)	¥32,974,000	-¥3,220,100	¥36,194,100
Total General Bonds	¥830,573,400	¥25,155,100	¥805,418,300
(of which Reconstruction Bonds [from March 2011 earthquake and tsunami])	¥6,721,300	-¥775,600	¥7,496,900
<b>Fiscal Investment and Loan Program Bonds</b>			
Long-term (10 years or more)	¥58,692,300	-¥4,119,500	¥62,811,800
Medium-term (2 to 5 years)	¥37,558,700	¥4,254,900	¥33,303,800
Total Fiscal Investment & Loan Program Bonds	¥96,251,000	¥135,400	¥96,115,600
<b>Other Bonds</b>			
Subsidy Bonds	¥209,400	¥75,200	¥134,200
Subscription/Contribution Bonds	¥4,627,700	-¥133,500	¥4,761,200
Government Bonds issued to Development Bank of Japan	¥1,324,700	¥0	¥1,324,700
Government Bonds issued to Nuclear Damage Liability Facilitation Fund	¥1,914,200	-¥1,141,800	¥3,056,000
Total Other Bonds	¥8,076,000	-¥1,200,100	¥9,276,100
Total Government Bonds	¥934,900,400	¥24,090,400	¥910,810,000
<b>Borrowings</b>			
Long-term (over one year)	¥14,032,900	-¥828,100	¥14,861,000
Short-term (one year or less)	¥40,387,000	¥440,500	¥39,946,500
Total Borrowings	¥54,419,900	-¥387,600	¥54,807,500
<b>Financing Bills</b>	¥82,239,200	-¥1,509,700	¥83,748,900
<b>Total Government Bonds and Borrowings</b>	<b>¥1,071,559,500</b>	<b>¥22,193,100</b>	<b>¥1,049,366,400</b>

2. Outstanding Government Guaranteed Debts (¥ Million Yen)	FY2016	FY2015	
	3/31/2017 Amount (¥ Millions)	Change (+/-) from Previous Fiscal Year (¥ Millions)	3/31/2016 Amount (¥ Millions)
<b>Government Guaranteed Debts</b>			
<b>Total Government Guaranteed Debts</b>	<b>¥40,283,200</b>	<b>-¥1,497,400</b>	<b>¥41,780,600</b>

## NOTES

1-Figures may not sum up to total because of rounding.

2-Above "Outstanding Government Bonds and Borrowings" contains government bonds and borrowings held by government.

3-Figures are total of the general account and all special accounts. The coverage is different from the central government defined in SNA.

4-The data as of June 30, 2017 will be released on August 10, 2017.

## SOURCE

1-Ministry of Finance Japan, Central Government Debt (As of March 31, 2017) Press Release May 10, 2017 at

<http://www.mof.go.jp/english/jgbs/reference/gbb/index.htm><http://www.mof.go.jp/english/jgbs/reference/gbb/e201703.html>

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## Bank of Japan Monetary Intermediation Cost

### Deposit Insurance Corporation of Japan Financial Assistance (by Fiscal Year)

(as of March 31, 2017)

The financial assistance method is to give financial assistance to ensure smooth transfer of business in case a failed financial institution transfers business to or merges with the assuming financial institution. The financial assistance may take the form of a monetary grant, loan or deposit of funds, purchase of assets, guarantee or assumption of debts, subscription of preferred stock or loss sharing. From FY1992 to March 2017, financial assistance amounting to ¥25,464.8 billion has been implemented in 182 cases.

(Unit: ¥ billions)		Monetary Grants		Asset Purchases	Others	Total Assistance
Fiscal Year	Cases of Financial Assistance	To Assuming Financial Institutions	To Failed Financial Institutions (Equitable Financial Assistance)			
1992	2	¥20.0		-	¥8.0	¥28.0
1993	2	¥45.9		-	-	¥45.9
1994	2	¥42.5		-	-	¥42.5
1995	3	¥600.8		-	-	¥600.8
1996	6	¥1,315.8		¥90.0	-	¥1,405.8
1997	7	¥152.4		¥239.1	¥4.0	¥395.5
1998	30	¥2,674.1		¥2,681.5	-	¥5,355.6
1999	20	¥4,637.4		¥1,304.4	-	¥5,941.8
2000	20	¥5,153.0		¥850.1	-	¥6,003.1
2001	37	¥1,639.4		¥406.4	-	¥2,045.8
2002	51	¥2,332.6		¥794.9	-	¥3,127.5
2003	0	-		-	-	¥0.0
2004	0	-		-	-	¥0.0
2005	0	-		-	-	¥0.0
2006	0	-		-	-	¥0.0
2007	0	-		-	-	¥0.0
2008	1	¥256.4		¥1.7	-	¥258.1
2009	0	-		-	-	¥0.0
2010	0	-		-	-	¥0.0
2011	1	¥46.2	¥115.3	¥53.0	-	¥214.5
2012	0	-		¥0.1	-	¥0.1
2013	0	-		-	-	¥0.0
2014	0	-		-	-	¥0.0
2015	0	-		-	-	¥0.0
2016	0	-		-	-	¥0.0
Total	182	¥18,916.5	¥115.3	¥6,421.2	¥12.0	¥25,465.0
		<b>Total Monetary Grants</b>	<b>¥19,031.8</b>	<b>Figures are rounded off.</b>		

#### Notes

1-Figures are based on the date when financial assistance was implemented. (Monetary grants include reductions taken place later.) Midori Bank cases (asset purchase in FY1998 and monetary grant in FY1999) are counted only in FY1998.

2-Monetary grants include that those to failed financial institutions (equitable financial assistance) in order to ensure equitable treatment among creditors, other than those to assuming financial institutions.

3-Asset purchase in FY2012 is the fourth asset purchase from Incubator Bank of Japan, which stood at ¥63 million (the figures are rounded off). The number of the cases was recorded for FY2011 when the first financial assistance was implemented. (As for Incubator Bank of Japan, from the first to the third asset purchases and asset purchases from assuming financial institutions in re-succession are combined to record as one case.)

#### Source

1-Deposit Insurance Corporation of Japan, Financial Assistance (by Fiscal Year) (as of March 31, 2017) at

[https://www.dic.go.jp/english/e\\_katsudo/](https://www.dic.go.jp/english/e_katsudo/)

[https://www.dic.go.jp/english/e\\_katsudo/shikinenjo.html](https://www.dic.go.jp/english/e_katsudo/shikinenjo.html)

[https://www.dic.go.jp/english/e\\_katsudo/page\\_000210.html](https://www.dic.go.jp/english/e_katsudo/page_000210.html)

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## Attachment 9

## Bank of Japan Monetary Intermediation Cost Monetary Intermediation Cost Impact on Economy and Jobs

## Assumptions

a-BOJ Reserve Requirement (From Attachment 1)	1.30%
b-Bank Note Rate Est.(Risk Free Rate( $r_f$ ) [Not less than zero] + Risk Premium est. at 25bp)	0.25%
c-Economic Growth Rate (Est.) for Cap Rate	4.00%
d-Capital Value per Job (Est. \$1.0M US Equivalent)	¥111,434,385
Exchange Rate \$1 U.S. Dollar to Yen <sup>7</sup>	3/31/2017 ¥111.43
New York Times 7/6/2009 Estimated Job Creation Cost (\$)	\$31,169
8-New York Times 7/6/2009 article \$31,169 job creation cost converted to Yen (¥)	¥3,473,298

### Step 1. Estimate Monetary Intermediation Cost

I. Historical Average (2007-2016, 10-years)	
	(¥ Billions)
1. BOJ Operations (Ave Last 10 Years (2007-2016)) <sup>1</sup>	¥509.2
2. New Money (M1) Issued times ( 1 - reserve requirement) <sup>1,a</sup>	¥17,433.6
Total Annual Intermediation	¥17,942.8
Intermediation Capitalized <sup>2,c</sup>	¥448,569.1

II. Fiscal 2016 Actual	
	(¥ Billions)
1. BOJ Operations (Fiscal 2016 Actual Net) <sup>1</sup>	¥497.3
2. New Money (M1) Issued times ( 1 - reserve requirement) <sup>1,a</sup>	¥42,792.7
Total Annual Intermediation	¥43,289.9
Intermediation Capitalized <sup>2,c</sup>	¥1,082,248.6

III. Monetary Debt Impact <sup>1,2,3 Notes</sup>	
	(¥ Billions)
Bank note to Gov't to cover fractional reserve deposit cash shortage <sup>3,b</sup>	¥59,573.9
Commercial Bank Federal Gov.t Securities Holdings Retired <sup>3</sup>	¥79,991.7
Bank of Japan Gov't Securities Holdings Retired <sup>3</sup>	¥417,711.5
Intermediation Capitalized	¥557,277.1

### Step 2. Estimate Monetary Intermediation Cost Impact on Japanese 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.)

Japanese Economic Indicators (as of 3/31/2017)	
GDP Fiscal 2016 (¥ Billions) <sup>4</sup>	¥539,254.3
Total Central Government Debt (¥ Billions) <sup>5</sup>	¥1,071,559.5
Unemployment, 2017-3 [une_nb_m] <sup>6</sup>	1,880,000

Risk Free Rate ( $r_f$ ) for bank note, not less than 0%	
[GDP] - [Monetary Intermediation] (Net % GDP)	
1995 to 2016 ( 22 Years)	-4.04%
2007 to 2016 (10 Years)	-3.28%
2012 to 2016 (5 Years)	-3.77%
Last Year 2016	-7.03%
Source: Attachment 4	

### Bank of Japan Monetary Intermediation Cost Economic Impact Estimates

Estimation Basis	(A)		(B)	(C)	(D)	(E)	(F)	(G)	(H)
	Intermediation Cost		Jobs Impact Estimates			Unemployment Reduction %	GDP % Improvement	Federal Debt Reduction %	
	Annual	Capitalized	Annual	Capitalized	Average				
I. Last 10 Ave ('07-'16)	¥17,942.8	¥448,569.1	5,165,915	4,025,410	4,595,663	244.5%	3.3%		
II. Fiscal 2016 Actual	¥43,289.9	¥1,082,248.6	12,463,642	9,711,981	11,087,811	589.8%	8.0%		
III. Monetary Debt Est.	¥22,291.1	¥557,277.1	6,417,843	5,000,944	5,709,394	303.7%	4.1%	52.0%	
<b>Averages</b>	<b>¥27,841.3</b>	<b>¥696,031.6</b>	<b>8,015,800</b>	<b>6,246,112</b>	<b>7,130,956</b>	<b>379.3%</b>	<b>5.2%</b>	<b>52.0%</b>	

The BOJ fractional reserve monetary system has an average 98.7% (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 ¥80,000,000 Yen of capital value per job creation, the average ¥549.7 trillion capitalized cost represents an estimated 6,871,000 private sector jobs. Per NY Times estimate the ¥22.0 trillion annual cost would be approximately 8,512,000 jobs. These estimates indicate the approximate cost of monetary intermediation is on the order of 7.7 million jobs.

## Notes

- 1-Japanese government debt holdings by commercial banks expected to be credited and retired for use in funding full reserve deposits.
- 2-Bank debt to Japanese government estimated to be first lien at the same interest rate for all banks based on the risk free rate ( $r_f$ ) for Japan, but not less than zero + a risk premium estimated at 25 basis points (0.25%).
- 3-Ignores potential interest rate manipulation intermediation costs.

## Sources

- 1-BOJ Operations and M1 increases from Attachment 4 BOJ Annual Monetary Intermediation Cost 1995 to 2016 using M1 Money Stock.
- 2-Intermediation Capitalized = [Annual Intermediation] ÷ [Economic Growth est. for Cap Rate (c)]
- 3-Bank Note amounts from Attachment 6(a) Japanese Commercial Banks Consolidated Conversion Estimate and Attachment 6(c) Bank of Japan (BOJ) Conversion Estimate.
- 3-GDP data from Cabinet Office, Government of Japan, Time Series Data, Annual Nominal, Fiscal Year GDP at [http://www.esri.cao.go.jp/en/sna/sokuhou/sokuhou\\_top.html](http://www.esri.cao.go.jp/en/sna/sokuhou/sokuhou_top.html)
- 5-Total Central Government debt from Attachment 7 Japanese Central Government Debt.
- 6-Unemployment data from European Commission eurostat, Harmonised unemployment by gender - 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)
- 7-Historical exchange rate for U.S. Dollar (\$) to Yen (¥) from x-rates.com at <http://www.x-rates.com/historical/>
- 8-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/>

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# Bank of Japan Monetary Intermediation Cost

## Direct Issuance (Seigniorage) Monetary Intermediation

### M1 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 issued 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 deposit 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 government insurance.

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

$$\begin{aligned} \text{[% Change MS}_N] &= \frac{[MS_N - MS_{N-1}]}{[MS_{N-1}]} = \frac{\text{Money Stock}_N \times \text{GDP}_N}{\text{Money Stock}_{N-1} \times \text{GDP}_0} - 1 \\ \text{[Labor Dividend (LD)]} &= \text{Seigniorage} \\ \text{Provided } [GDP_N] &\text{ greater than any previous } [GDP_X] \text{ in the series 0 to N-1, if not then } \text{[% Change MS}_N] = 0\% \end{aligned}$$

**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	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
GDP <sup>2</sup> (End of Year ¥ Billions)	¥529,076.6	¥530,997.3	¥509,465.8	¥492,070.4	¥499,281.0	¥494,017.2	¥494,478.0	¥507,246.0	¥518,468.5	¥533,904.4	¥539,254.3
Economy GDP (Begin GDP <sub>N-1</sub> )		100.000	100.363	96.293	93.006	94.368	93.373	93.461	95.874	97.995	100.912
Economy GDP (End GDP <sub>N</sub> /GDP <sub>0</sub> )	100.000	100.363	96.293	93.006	94.368	93.373	93.461	95.874	97.995	100.912	101.924
<b>% GDP Change (GDP<sub>N</sub>/GDP<sub>N-1</sub> - 1)</b>		<b>0.363%</b>	<b>-4.055%</b>	<b>-3.414%</b>	<b>1.465%</b>	<b>-1.054%</b>	<b>0.093%</b>	<b>2.582%</b>	<b>2.212%</b>	<b>2.977%</b>	<b>1.002%</b>
% Change Cumulative (GDP <sub>N</sub> /GDP <sub>0</sub> - 1)	0.000%	0.363%	-3.707%	-6.994%	-5.632%	-6.627%	-6.539%	-4.126%	-2.005%	0.912%	1.924%

#### Money Stock Growth

	Year/Period (N)										
	0	1	2	3	4	5	6	7	8	9	10
Money Stock (Begin 1/1)		100.000	100.363	100.363	100.363	100.363	100.363	100.363	100.363	100.363	100.912
% Change (Period N from GDP <sub>N</sub> - 1)		0.363%	-4.055%	-3.414%	1.465%	-1.054%	0.093%	2.582%	2.212%	2.977%	1.002%
% Change Cumulative (Σ MS from 0)		0.363%	-3.707%	-6.994%	-5.632%	-6.627%	-6.539%	-4.126%	-2.005%	0.912%	1.924%
<b>Labor Dividend (Year N)<sup>3</sup></b>		<b>0.363%</b>	<b>0.000%</b>	<b>0.000%</b>	<b>0.000%</b>	<b>0.000%</b>	<b>0.000%</b>	<b>0.000%</b>	<b>0.000%</b>	<b>0.547%</b>	<b>1.002%</b>
Money Stock (End)	100.000	100.363	100.363	100.363	100.363	100.363	100.363	100.363	100.363	100.912	101.924
Labor Div Cumulative (MS <sub>N</sub> /MS <sub>0</sub> - 1)	0.000%	0.363%	0.363%	0.363%	0.363%	0.363%	0.363%	0.363%	0.363%	0.912%	1.924%
<b>Money Stock (LD Model) (Begin)</b>		<b>\$483,207.6</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$487,616.8</b>
<b>Labor Dividend (Year/Period N)</b>		<b>\$1,754.2</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$2,655.1</b>	<b>\$4,886.1</b>
<b>Money Stock (LD Model) (End)</b>	<b>\$483,207.6</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$484,961.8</b>	<b>\$487,616.8</b>	<b>\$492,502.9</b>
<b>Money Stock (M1 Actual)</b>	<b>¥483,207.6</b>	<b>¥482,837.3</b>	<b>¥480,386.7</b>	<b>¥482,867.0</b>	<b>¥492,396.0</b>	<b>¥515,772.0</b>	<b>¥534,532.8</b>	<b>¥560,220.8</b>	<b>¥586,543.9</b>	<b>¥616,483.1</b>	<b>¥659,839.4</b>
<b>Variance (with LD Model)</b>	Over / (Under)	-0.4%	-0.9%	-0.4%	1.5%	6.4%	10.2%	15.5%	20.9%	26.4%	34.0%
<b>Money Stock (LD Model)/GDP Ratio</b>	100.0%	100.0%	104.2%	107.9%	106.4%	107.5%	107.4%	104.7%	102.4%	100.0%	100.0%
<b>Variance (Over +/ Under -)</b>	0.0%	0.0%	4.2%	7.9%	6.4%	7.5%	7.4%	4.7%	2.4%	0.0%	0.0%

#### Notes/Sources

1-M1 Money Stock data Annual Calendar (Not Seasonally Adjusted) from Federal Reserve Bank of St. Louis at

<https://fred.stlouisfed.org/series/MANMM101JPA189S>

Last Update: 10/17/2017

2-GDP data from Cabinet Office, Government of Japan, Time Series Data, Annual Nominal, Fiscal Year GDP at

[http://www.esri.cao.go.jp/en/sna/sokuhou/sokuhou\\_top.html](http://www.esri.cao.go.jp/en/sna/sokuhou/sokuhou_top.html)

Download Date: 1/12/2018

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.

## Bank of Japan Monetary Intermediation Cost 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. (Jul 31, 1912 - Nov 16, 2006)                                       |
| 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 <i>The Role of Money</i> 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 Irving Fisher                  | Economics Professor, Yale, one of the most respected economists from the 1st half of the 20th century advocated for 100% reserve system from 1934 for the remainder of his life. President AEA 1918. (1867-1947)               |
| 2 Herman E. Daly                 | Economics Professor, University of Maryland, author in 2007 of "Ecological economics and sustainable development: selected essays of Herman Daly", p.114.  |
| 3 Laurence Jacob Kotlikoff       | Economics Professor, Boston University (January 30, 1951 – )   |
| 4 Jesús Huerta de Soto Ballester | Economics Professor, Rey Juan Carlos University, Madrid, Spain (December 23, 1956 – )  |
| 5 Jörg Guido Hülsmann            | Economics and Law Professor, Université d'Angers, Angers, France   |
| 6 Richard A. Werner              | International Banking Professor, University of Southampton, England  |
| 7 Joseph Huber                   | co-author with James Robertson of <i>Creating New Money: A Monetary Reform for the Information Age</i> , 2000, chair of economic and environmental sociology at Martin Luther University of Halle-Wittenberg, Germany (1948-). |
| 8 James Robertson                | co-author with Joseph Huber of <i>Creating New Money: A Monetary Reform for the Information Age</i> , 2000, British political and economic thinker/activist (born August 11, 1928).  |
| 9 Lauchlin Currie                | Assistant to Former Federal Reserve Chairman Marriner Eccles during Roosevelt administration (October 8, 1902 – December 23, 1993).  |
| 10 Murray Rothbard               | Notable Austrian School Economist (March 2, 1926 – January 7, 1995)  |
| 11 Ludwig von Mises              | Prominent Early Austrian School Economist (September 29, 1881 – October 10, 1973)  |
| 12 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. (Oct 9, 1899 - Jun 19, 1946)                    |
| 13 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–Feb 9, 1970)   |
| 14 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).  |
| 15 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.                                |
| 16 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).  |
| 17 Lloyd W. Mints                | Economics professor, U. Chicago signed 100% banking reserves letter March 1933 on file in Roosevelt Library in Hyde Park, NY (Feb 20, 1888 – Jan 3, 1989).   |
| 18 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.                                |
| 19 Frank Dunstone Graham         | Economics and International Finance Professor Princeton (1890-1949). Frank D. Graham Memorial Lecture at Princeton is named in his honor. (Jan 1, 1890 - Sep 24, 1949).  |
| 20 Charles R. Whittlesley        | Economics professor at Princeton and Wharton School, U. Penn (1900-79).  |
| 21 Richard A. Lester             | Labor Economics Professor, Former Chairman Princeton Department of Economics author "Gold Money, Bank Money, and Real Money" VQR Spring 1941 (3/1/1908 – 12/31/1997). AEA VP 1961.   |
| 22 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).                         |
| 23 Willford I. King              | Economics Professor, NYU 1927-45 (1880–1962).  |
| 24 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.                                     |
| 25 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).  |
| 26 James W. Angell               | Economics Professor Columbia University (1898-1986).   |
| 27 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.   |

### # 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, (Feb 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 and Truman Administrations  |
| 3 Paul Howard Douglas  | U.S. Senator (D-IL) 1948-66 and former Univ of Chicago economics professor supported 100% reserve banking including co-authoring <i>A Program for Monetary Reform</i> 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 (Apr 6, 1901–Sep 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 (2005-2017)   |

### # 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 <i>Of Money</i> 1752. (1711-1776)        |
| 3 Robert de Fremery  | Respected financial writer and author <i>Money and Freedom</i> 1955. (Aug 24, 1916 - Nov 7, 2000)                  |
| 4 Gertrude M. Coogan | First woman to receive MBA from Northwestern in 1922 with special honors and author of <i>Money Creators</i> 1935. |

### SOURCES:

- 1-Robert de Fremery from *Money and Freedom*, 1955, in Chapter 6 at [https://www.cooperative-individualism.org/fremery-robert-de\\_money-and-freedom-1955-00.htm](https://www.cooperative-individualism.org/fremery-robert-de_money-and-freedom-1955-00.htm)
- 2-"Irving Fisher and the 100% Reserve Proposal", William Allan, UCLA, 1993 at [http://www.fullreservebanking.com/?page\\_id=24](http://www.fullreservebanking.com/?page_id=24)
- 3-"The 'Chicago Plan' and New Deal Banking Reform", Ronnie J. Phillips, 1992 at <http://www.levyinstitute.org/pubs/wp/76.pdf>

## Attachment 12

# Bank of Japan Monetary Intermediation Cost Formulas

## Symbol Key

- GDP = Gross Domestic Product (¥), measure of economic output of economy.  
 MS = Money Stock (¥) at end of given period X (M1-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 Bank of Japan 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 Bank of Japan Banking System Estimate

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

## Annual Monetary Intermediation Cost (%) of Bank of Japan 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

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

[Labor Dividend]  
 [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)