

Federal Reserve Monetary Intermediation Cost to the American Economy

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

Fractional Reserve Lending Financial Intermediation Analysis

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

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

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

Formulas (Earnings \$ Amounts)

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

Monetary Expansion Formula (Column Not Shown)

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

Assumptions

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

Formulas (Earnings % Total)

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