

# European Central Bank Monetary Intermediation Cost

## Fractional Reserve Analysis with 100% Reserve Requirement

### (c) No Financial Intermediary to 100% Reserve Requirement

#### No Financial Intermediary Analysis

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

I. No Financial Intermediary (Real Asset Tractor Lending)					
	Farmer A	Farmer B	Intermediary	Total	
Start (Cash)	€ 250	€ 250	€ 500	€ 1,000	Begin Cash
Tractor Rent	(€ 500)	€ 500		€ 0	
Sell Crop	€ 1,500			€ 1,500	
End (Cash)	€ 1,250	€ 750	€ 500	€ 2,500	End Cash
Direct Net Earnings	€ 1,000	€ 500	€ 0	€ 1,500	Earnings (€)
% Earnings	66.67%	33.33%	0.00%	100.00%	Earnings (%)

II. With 100% Reserve Financial Intermediation Added ( 100% Real Backing)					
	Farmer A	Farmer B	Intermediary	Total	
Start (Cash)	€ 250	€ 250	€ 500	€ 1,000	Begin Cash
Direct Net Earnings(Above)	€ 1,000	€ 500	€ 0	€ 1,500	
Loan	€ 500		€ 500	€ 500	
Loan Interest	(€ 25)		€ 25	€ 0	
Pay Back Loan	(€ 500)		€ 500	€ 0	
End (Cash)	€ 1,225	€ 750	€ 525	€ 2,500	End Cash
Net Earnings	€ 975	€ 500	€ 25	€ 1,500	Earnings (€)
% Earnings	65.00%	33.33%	1.67%	100.00%	Earnings (%)
Wealth Transfer=(Principal+Interest) x (1- RR). Inflation is Principal portion wealth transfer.				0.00%	Inflation Cash

100% Fractional Reserve Requirement Financial Intermediation/Wealth Transfer Impact						
	(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)	€ 500.00	€ 0.00	€ 0.00	0.00%		€ 0.00
Interest (Loan(a) x (c))	€ 25.00		€ 0.00	0.00%	€ 25.00	€ 25.00
Total	€ 525.00	€ 0.00	€ 0.00	0.00%	€ 25.00	€ 25.00
<b>Wealth Transfer (Unearned Return = <math>\sum(B)</math>)</b>						€ 0.00
<b>Financial Intermediation Unearned Return % (Unearned Return/Total Return = <math>\sum(B)/\sum(D)</math>)</b>						0.00%
<b>Intermediary Return on €500 Required Reserve Investment (Total Return/Start Cash)</b>						5.00%
<b>Earned Financial Intermediation (Interest x Reserve Requirement = <math>\sum(C)</math>)</b>						€ 25.00
<b>Earned Financial Intermediation % of Total Return of €25 (Earned Return/Total Return)</b>						100.00%

#### 100% Fractional Reserve Financial Intermediation Analysis

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

#### Fractional Reserve Intermediation Analysis

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

#### Assumptions

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