EC 313, Fall 2019 **Name:** ____________________
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Final - Equation Sheet **UO ID:** ____________________

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Chapter 19

Velocity of money: $V = \frac{P \times Y}{M^s}$

Equation of exchange/Quantity theory of money: $P \times Y = M^s \times V$

Inflation rate: $\pi = \%\Delta M^s - \%\Delta Y$

$\%\Delta$ in $(x \times y)$ = $\%\Delta$ in x + $\%\Delta$ in y

Fisher's theory of money demand: $M^d = \frac{1}{V} \times P \times Y$

Keynes' theory of money demand: $\frac{M^d}{P} = L(i, Y)$

V: velocity; P: price level;

Y: aggregate output/income M^s: money supply;

π: inflation rate; $\%\Delta$: growth rate;

M^d: quantity demanded of money; i: interest rate;

Chapter 14

Monetary base: MB=C+R

Monetary base: MB=BR + MB_n

M1: M1=C+D

currency-to-deposit ratio: $c = \frac{C}{D}$

excess reserves-deposit ratio: $er = \frac{ER}{D}$

required reserves ratio: $rr = \frac{RR}{D}$

reserves: $R = ER + RR$

Checkable deposits: $D = \frac{1}{rr} \times R$

Change in checkable deposits: $\Delta D = \frac{1}{rr} \times \Delta R$

money multiplier: $m = \frac{1+c}{c+rr+er}$

Money supply: $M = m \times MB$

Change in money supply: $\Delta M = m \times \Delta MB$

MB: monetary base; C: currency in circulation;

R: reserves; BR: borrowed reserves;

MB_n: non-borrowed monetary base; D: checkable deposits;

RR: requires reserves; ER: excess reserves;

ΔM: change in M; ΔMB: change in MB;

ΔD: change in D; ΔR: change in R

Chapter 6

Expectation Theory: $i_{nt} = \frac{i_t + i^e_{t+1} + i^e_{t+2} + \cdots + i^e_{t+(n-1)}}{n}$

Liquidity Premium Theory: $i_{nt} = \frac{i_t + i^e_{t+1} + i^e_{t+2} + \cdots + i^e_{t+(n-1)}}{n} + l_{nt}$

i_{nt}: interest rate on a n-year bond at year t (in %);

i_t: interest rate on a 1-year bond at year t (in %);

i^e_{t+1}: interest rate on a 1-year bond expected for year t+1 at year t (in %);

l_{nt}: liquidity premium for the n-year bond at year t (in %)

Chapter 4

Future value: $FV_n = PV \times (1+i)^n$

Present value: $PV = \frac{FV_n}{(1+i)^n}$

Fixed-Payment Loan: Loan Value $= \frac{FP}{(1+i)} + \frac{FP}{(1+i)^2} + \frac{FP}{(1+i)^3} + \ldots + \frac{FP}{(1+i)^n}$

Coupon Bond: Price $= \frac{C}{(1+i)} + \frac{C}{(1+i)^2} + \frac{C}{(1+i)^3} + \ldots + \frac{C}{(1+i)^n} + \frac{F}{(1+i)^n}$

Coupon payment: $C = c \times F$

Discount Bond: Price $= \frac{F}{(1+i)^n}$

Holding Period Return: $R = \frac{C + P_{t+1} - P_t}{P_t} = i_c + g$

Current Yield: $i_c = \frac{C}{P_t}$

Capital Gain: $g = \frac{P_{t+1} - P_t}{P_t}$

Fisher Equation: $i = r + \pi^e$

PV: present value (in \$); FV_n: future value in n years (in \$);

n: years to maturity; i: (nominal) interest rate (in %);

FP: fixed payment (in \$); C: coupon payment (in \$);

c: coupon rate (in %); F: face value (in \$);

P_t: price at year t (in \$); P_{t+1}: price at year t+1(in \$);

r: real interest rate (in %); π^e: expected inflation (in %).