



College of Business Administration  
Department of Economics  
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## Master of Arts in Applied Economics Macroeconomics Comprehensive Examination

### Question 1: Monetary Growth Rate and Inflation

Assume that for each percentage point increase in the nominal interest rate, people want to hold 100 goods fewer real cash balances. During period 2 people (correctly) become aware that the growth rate of money supply will increase from 5 percent to 10 percent per year. Fill in the market clearing values in the table below.

Time Period	Real Interest Rate, $r$	Expected Inflation, $\pi$	Nominal Interest Rate, $R$	Nominal Money Supply, $M$	Price Level, $P$	Real Money Supply, $M/P$
0	3%	5%	8%	\$5714.29	\$2.86/good	2000 goods
1	3%	5%	8%	\$6000.00	\$3.00/good	2000 goods
2	3%	10%		\$6300.00		
3	3%	10%		\$6930.00		
4	3%	10%		\$7623.00		

In period 2, the price level 'jumps' to its new, higher level. **In details**, explain why?

## Question 2: Wealth Effects from Changes in the Real Wages

Suppose that the real wage rate,  $w/P$ , increases,

- a) Why are there offsetting effects on wealth? What would you predict for the wealth effect on aggregate consumption demand and labor supply?
- b) Suppose that most suppliers of labor own relatively little of the ownership rights in firms. What would you predict for the wealth effect on aggregate labor supply?

## Question 3: A Simple Transactions Model of Money Demand.

Consider the following model of money demand. An individual consumes  $C$  dollars worth of goods every month. Bank deposits earn interest at a monthly rate of  $r$ . We assume that the individual consumes (and therefore spends the money) at an even rate throughout the month. Each time a withdrawal is made the individual incurs a *real* cost equal to  $\phi$ . His optimization problem is to select  $N$ , the number of evenly spaced withdrawals from the bank during the month, that minimize his total (monthly) costs.

- a) Do you think the above description of an individual's optimization problem is very realistic? Is the model missing any *significant* aspect of reality? Explain.
- b) Set up the individual's optimization problem and solve it. For simplicity, treat  $N$  as a continuous variable. You will find that the optimal  $N$  satisfies what is called the "square root rule".
- c) It actually doesn't make much sense for  $N$  to be a continuous variable. So, suppose now that  $N$  is constrained to be an integer. Also, suppose that  $C = \$1000$ ,  $r = 1\%$ , and  $\phi = \$4$ . What is the optimal value of  $N$  now?