CHAPTER 22

The Demand for Money

Quantity Theory of Money

Velocity

$$V = \frac{P \times Y}{M}$$

Equation of Exchange $M \times V = P \times Y$

Quantity Theory of Money

1. Irving Fisher's view: V is fairly constant
2. Equation of exchange no longer identity
3. Nominal income, PY, determined by M
4. Classicals assume Y fairly constant
5. P determined by M

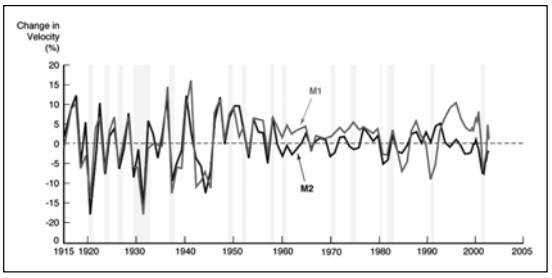
Quantity Theory of Money Demand

$$M = \frac{1}{V} \times \text{PY}$$

$M^d = k \times PY$

Implication: interest rates not important to M^d

Change in Velocity from Year to Year: 1915–2002



Cambridge Approach

Is velocity constant?

1. Classicals thought V constant because didn't have good data
2. After Great Depression, economists realized velocity far from constant

Keynes's Liquidity Preference Theory

3 Motives

1. Transactions motive—related to Y
2. Precautionary motive—related to Y
3. Speculative motive
   A. related to W and Y
   B. negatively related to i

Liquidity Preference

$$\frac{M^d}{P} = f(\underset{-}{i}, \underset{+}{Y})$$

Keynes's Liquidity Preference Theory

Implication: Velocity not constant

$$\frac{P}{M^d} = \frac{1}{f(i, Y)}$$

Multiply both sides by Y and substitute in $M = M^d$

$$V = \frac{PY}{M} = \frac{Y}{f(i, Y)}$$

1. **$i \uparrow$, $f(i,Y) \downarrow$, $V \uparrow$**
2. **Change in expectations of future i, change $f(i,Y)$ and V changes**

Baumol-Tobin Model of Transactions Demand

Assumptions
1. Income of $1000 each month
2. 2 assets: money and bonds

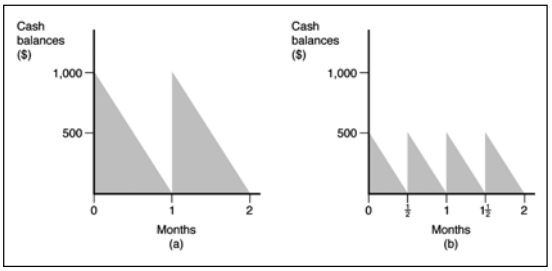
If keep all income in cash
1. Yearly income = $12,000
2. Average money balances = $1000/2
3. Velocity = $12,000/$500 = 24

Keep only 1/2 payment in cash
1. Yearly income = $12,000
2. Average money balances = $500/2 = $250
3. Velocity = $12,000/$250 = 48

Trade-off of keeping less cash
1. Income gain = $i \times \$500/2$
2. Increased transactions costs

Conclusion: Higher is i and income gain from holding bonds, less likely to hold cash: Therefore $i \uparrow$, $M^d \downarrow$ and Velocity will increase
Transactions demand is function of *i*

Cash Balance in Baumol-Tobin Model



Precautionary and Speculative M^d

Precautionary Demand
Similar tradeoff to Baumol-Tobin framework
1. Benefits of precautionary balances
2. Opportunity cost of interest foregone

Conclusion:
$i \uparrow$, opportunity cost $\uparrow$, hold less precautionary balances, $M^d \downarrow$

Speculative Demand
Problems with Keynes's framework:
Hold all bonds or all money: no diversification

Tobin Model:
1. People want high R^e, but low risk
2. As $i \uparrow$, hold more bonds and less M, but still diversify and hold M

Problem with Tobin model: No speculative demand because T-bills have no risk (like money) but have higher return

Friedman's Modern Quantity Theory

Theory of asset demand: M^d function of wealth (Y_P) and relative R^e of other assets

$$\frac{M^d}{P} = f(\underset{+}{Y_P}, \underset{-}{r_b - r_m}, \underset{-}{r_e - r_m}, \underset{-}{\pi^e - r_m})$$

Differences from Keynesian Theories

1. Other assets besides money and bonds: equities and real goods
2. Real goods as alternative asset to money implies M has direct effects on spending
3. r_m not constant: $r_b \uparrow$, $r_m \uparrow$, $r_b - r_m$ unchanged, so M^d unchanged: i.e., interest rates have little effect on M^d
4. M^d is a stable function

Implication of 3:

$$\frac{M^d}{P} = f(Y_P) \Rightarrow V = \frac{Y}{f(Y_P)}$$

Since relationship of Y and Y_P predictable, 4 implies V is predictable: Get Q-theory view that change in M leads to predictable changes in nominal income, PY

Implications of Money Demand Theories

Keynes

M demand is very sensitive to i

Velocity is not constant (unpredictable b/c M demand is unstable)

M policy has little effect on i

Friedman

M demand is insensitive to i

Velocity is constant (predictable)

M policy determines Aggregate Spending (Q-Theory)

Empirical Evidence on Money Demand

Interest Sensitivity of Money Demand

Is sensitive, but no liquidity trap

Stability of Money Demand

1. *M1* demand stable till 1973, unstable after
2. Most likely source of instability is financial innovation
3. Cast doubts on money targets