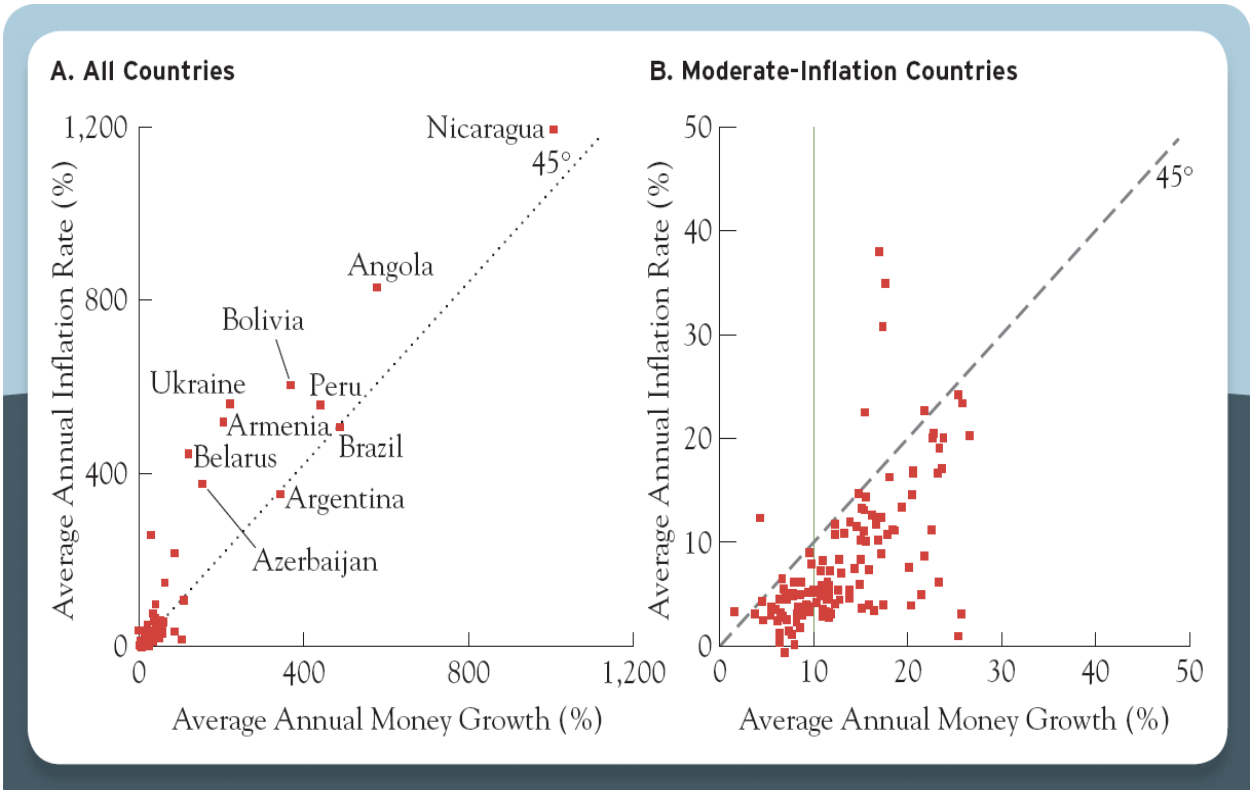
Chapter 20 – Quantity Theory, Inflation, and the Demand for Money

Inflation and Money Growth



- We can't have high, sustained inflation without monetary accommodation

To avoid sustained high inflation, central bank must watch money growth

- Something beyond just differences in money growth accounts for the differences in inflation across countries. We need to study the velocity of money.

Quantity Theory of Money

- Velocity fairly constant in short run
- Aggregate output at full-employment level
- Changes in money supply affect only the price level
- Movement in the price level results solely from change in the quantity of money

The Equation of Exchange – Dynamic Form

- **Demand for money**: To interpret Fisher's quantity theory in terms of the demand for money…

Divide both sides by *V*

When the money market is in equilibrium

Because *k* is constant, the level of transactions generated by a fixed level of *PY* determines the quantity of M^d.

➔ The demand for money is not affected by interest rates

From the equation of exchange to the quantity theory of money

- Fisher's view that velocity is fairly constant in the short run

- This transforms the equation of exchange into the quantity theory of money, which states that nominal income (spending) is determined solely by movements in the quantity of money M

Quantity Theory of Money and Inflation

Because the classical economists (including Fisher) thought that wages and prices were completely flexible, they believed that the level of aggregate output Y produced in the economy during normal times would remain at the full-employment level

- Percentage Change in ($x \times y$) = (Percentage Change in x) + (Percentage change in y)
- Using this mathematical fact, we can rewrite the equation of exchange as follows:

- Subtracting from both sides of the preceding equation, and recognizing that the inflation rate, is the growth rate of the price level,

- Since we assume velocity is constant, its growth rate is zero, so the quantity theory of money is also a theory of inflation:

Figure 1 Relationship Between Inflation and Money Growth

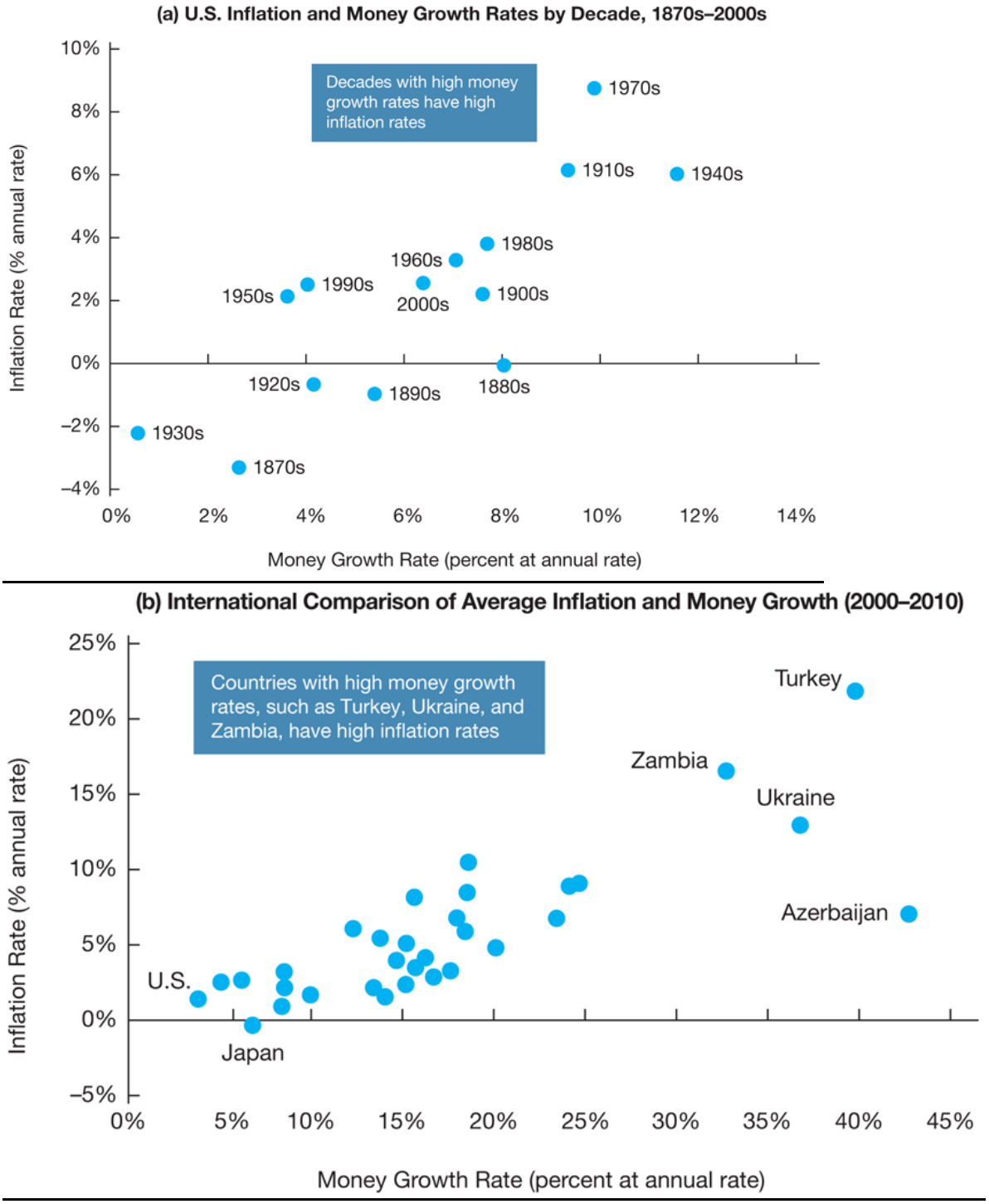
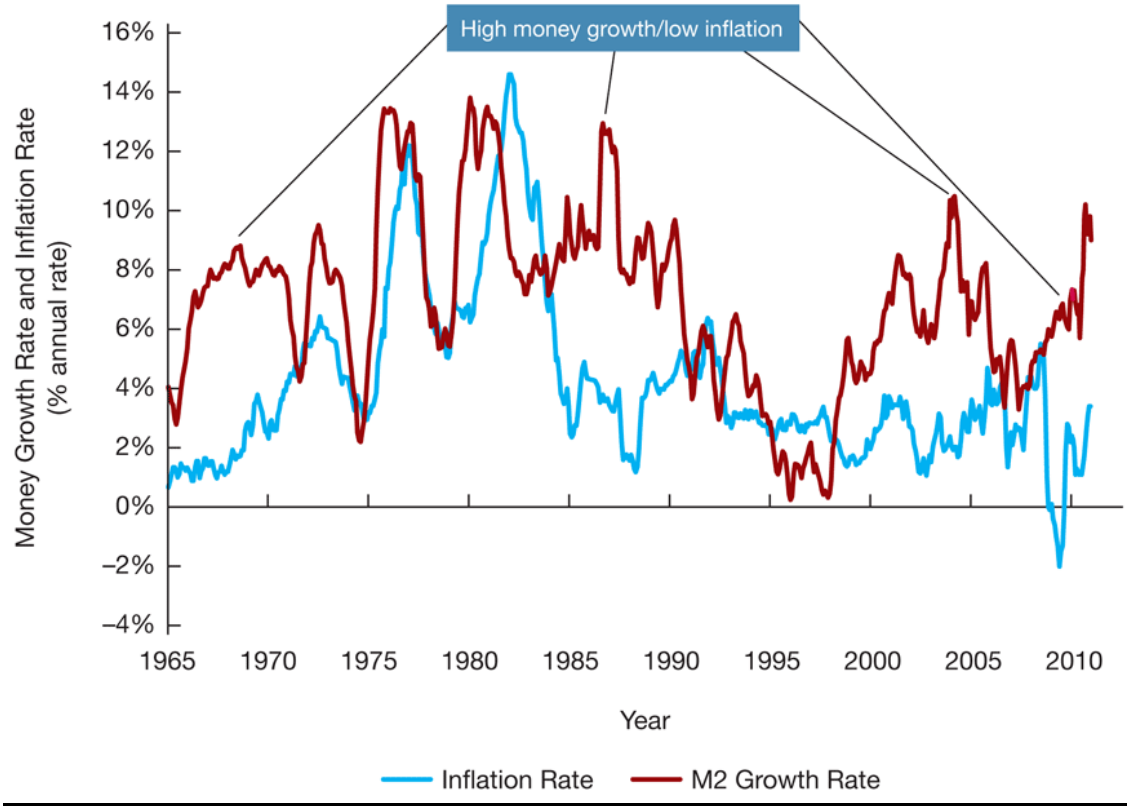


Figure 2 Annual U.S. Inflation and Money Growth Rates, 1965–2010



Budget Deficits and Inflation

- There are two ways the government can pay for spending: raise revenue or borrow

  Raise revenue by levying taxes or go into debt by issuing government bonds

- The government can also create money and use it to pay for the goods and services it buys

- The government budget constraint thus reveals two important facts:

  – If the government deficit is financed by an increase in bond holdings by the public, there is no effect on the monetary base and hence on the money supply

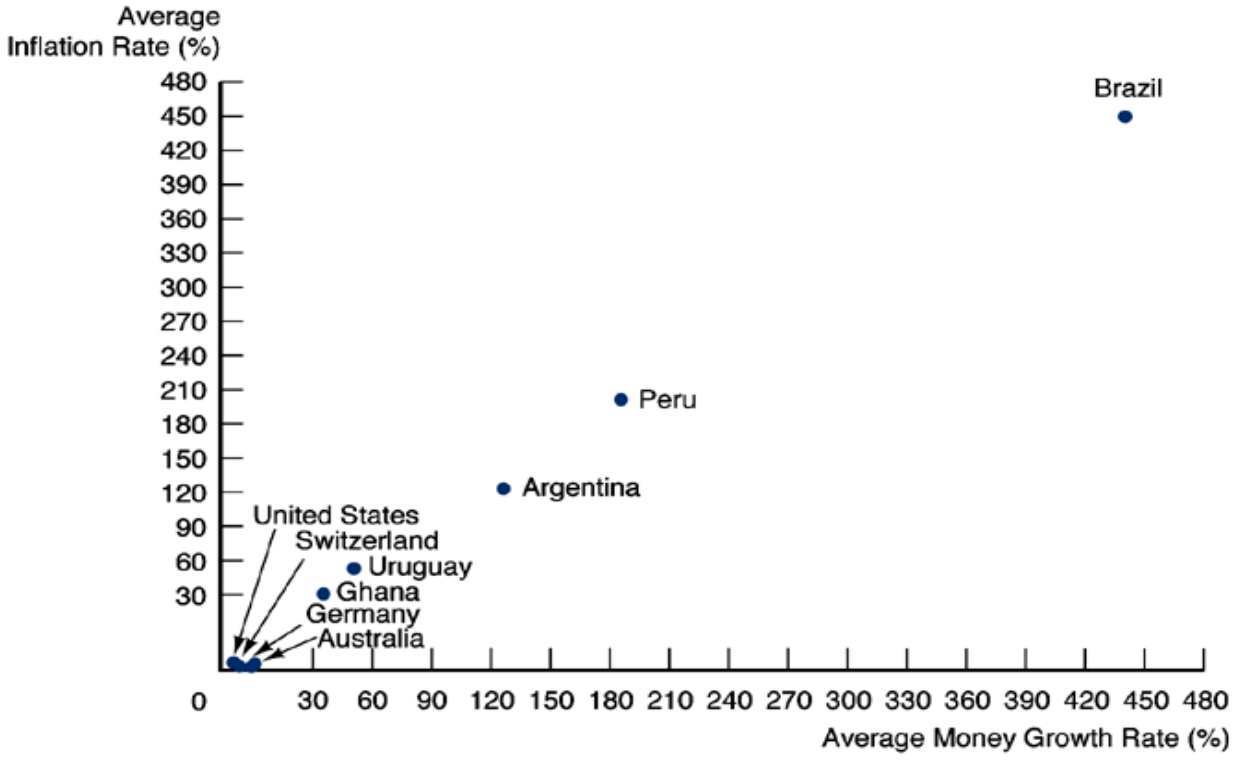
  - But, if the deficit is not financed by increased bond holdings by the public, the monetary base and the money supply increase

- **Hyperinflations** are periods of extremely high inflation of more than 50% per month

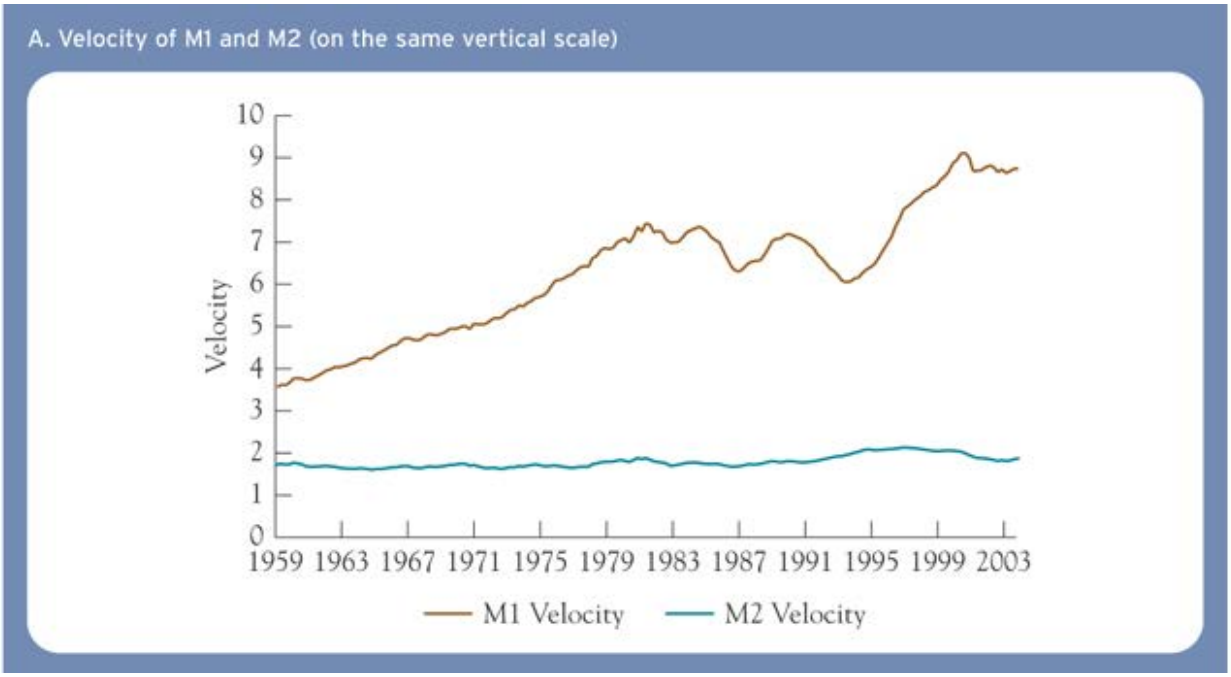
- Many economies—both poor and developed—have experienced hyperinflation over the last century, but the United States has been spared such turmoil

- One of the most extreme examples of hyperinflation throughout world history occurred recently in Zimbabwe in the 2000s

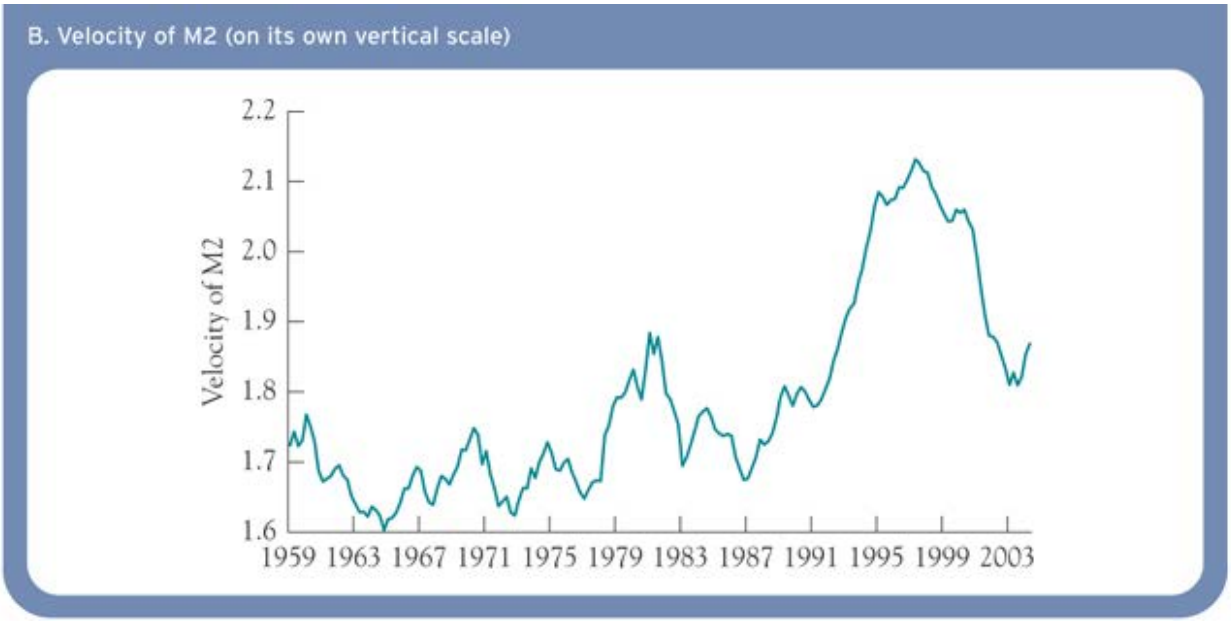
Examples of Hyperinflation:1980s and Early 1990s



Is Velocity Stable?



The Scale obscures the short-run movements in M2



Substantial short-run fluctuations in M2 velocity.

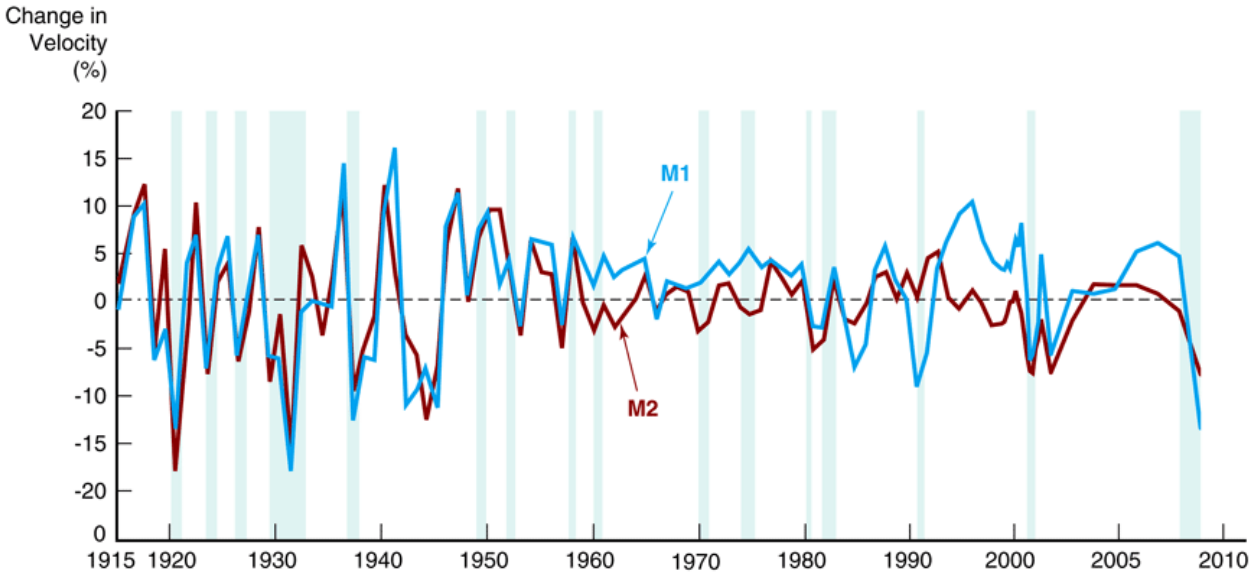
But the long-run trend is a modest increase from 1.72 to 1.82 over 45 years.

- The data tend to confirm Fisher's conclusion that in the long run (40 to 50 years) the velocity of money (M2) is stable

- However, central banker's are concerned with inflation over quarters and years.

- Velocity is volatile in the short-run, as shown on the previous chart and on the next chart.

Change in the Velocity of M1 and M2 from Year to Year, 1915–2008



To understand the velocity of money, must understand the demand for money.

Keynesian Theories of Money Demand

Keynes's Liquidity Preference Theory

Why do individuals hold money? Three Motives

1. Transactions motive

- Keynes initially accepted the quantity theory view that the transactions component is proportional to income

- Later, he and other economists recognized that new methods for payment, referred to as **payment technology**, could also affect the demand for money

The quantity of money the public holds for transaction purposes also depends on

-the cost of holding money

-The availability of substitutes

As P and/or Y increase => money demand will increases

As opportunity cost increases => money demand will decrease

- Higher nominal interest rate => higher opportunity cost of holding money => the less money individuals and businesses will hold for a given level of transactions => higher velocity of money.
- In high inflation countries, the opportunity cost of holding money is high.
    - M and V are increasing, so the increase in P is greater than the increase in M.

2. Precautionary motive

- Keynes also recognized that people hold money as a cushion against unexpected wants
- As a store of value, money provides diversification when held with a wide variety of other assets, including stocks and bonds
- Keynes argued that the precautionary money balances people want to hold would also be proportional to income
- Similar to transactions demand - as interest rates rise, the opportunity cost of holding precautionary balances rises. The precautionary demand for money is negatively related to interest rates

3. Speculative motive

- Keynes also believed people choose to hold money as a store of wealth, which he called the *speculative motive*

Putting the three motives together

Velocity is not constant:

- The procyclical movement of interest rates should induce procyclical movements in velocity.
- Velocity will change as expectations about future normal levels of interest rates change

Theory of Portfolio Choice and Keynesian Liquidity Preference

- The theory of portfolio choice can justify the conclusion from the Keynesian liquidity preference function that the demand for real money balances is positively related to income and negatively related to the nominal interest rate

Portfolio demand depends on

- Wealth
- the expected return relative to the alternatives
- expectations that interest rates will change in the future
- Risk
- Liquidity

Interest Rates and Money Demand

- We have established that if interest rates do not affect the demand for money, velocity is more likely to be constant—or at least predictable—so that the quantity theory view that aggregate spending is determined by the quantity of money is more likely to be true
- However, the more sensitive the demand for money is to interest rates, the more unpredictable velocity will be, and the less clear the link between the money supply and aggregate spending will be
- If the money demand function is unstable and undergoes substantial, unpredictable shifts as Keynes believed, then velocity is unpredictable, and the quantity of money may not be tightly linked to aggregate spending, as it is in the quantity theory
- The stability of the money demand function is also crucial to whether the Federal Reserve should target interest rates or the money supply
- If the money demand function is unstable and so the money supply is not closely linked to aggregate spending, then the level of interest rates the Fed sets will provide more information about the stance of monetary policy than will the money supply