Vinson

INSTITUTE OF INTERNATIONAL MONETARY RESEARCH

Analysis and insight into trends in money and banking, and their impact on the world's leading economies

Four Lectures on the History of Monetary Theory

by

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Lecture 2

The ‘Quantity Theory’

“Why money matters.”

Milton Friedman

The gold standard displaced by managed money

- As I said, I have a story is: metallic money moves from weight to tale; then, slowly come paper money and bank money; this leads to the move to the gold exchange standard; finally, to the idea that a (properly) managed *fiat* money is possible.
- And, if fiat money proves not to be manageable, as the monetary history of the 20th c. seems to show, what then?
- The intellectual story of the move from metallic money to managed fiat money is admirably told by David Laidler in his *The Golden Age of the Quantity Theory* (1991)
  - As Laidler shows, economists came to understand that a properly functioning was based on the "Quantity of money theory of the price level", to give it its full name
  - For Laidler the demise of the gold standard not exclusively attributable to WWI but to changes in monetary theory

Money market as a whole

- After considering the evolution of ideas about MD and MS, it's time to shift our attention to the money market as a whole and its role in the real economy
- Let us return to the moment when MD and MS were combined in monetary thought
- Crucial was the observation of the effect on the price level of the inflow of gold and silver from the Indies or Americas

MS and the price level

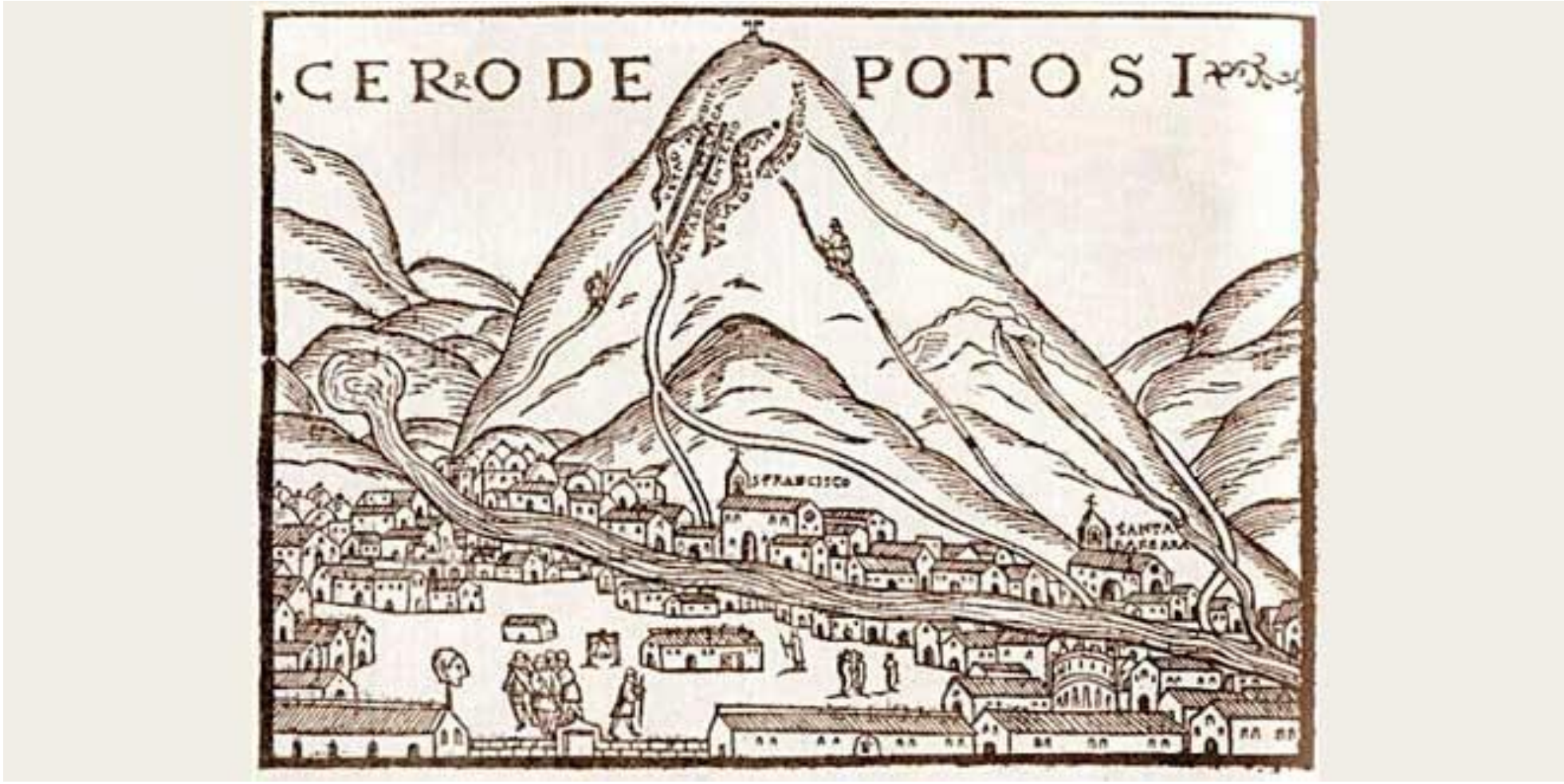
- We had Azpilcueta on the functions of money. He also was a path-breaker on the effect of MS on the price level, in the 1556 edition of his *Manual de confessores*
- Reasons for price rises: (1) “What makes money go up or down is there being great lack and need or abundance, it is worth more when there is great lack of it than where there is abundance” (2) “all merchandises become expensive because if the great need and small quantity there is of them and money as a saleable and exchangeable thing that it is a merchandise” (3) “other things being equal (“*siéndolo al ygual”)* the lands where there is great lack of money all saleable things and even the hands and labours of men are given for less money than where there is abundance of it … as happened in Spain after the discovery of the Indies covered it with gold and silver”

Money Supply and the exchange rate

- Fray Tomás de Mercado (1525-1575) wrote book on the ethics of merchants an financiers noticed by Schumpeter. In the second edn. of 1571 he also dealt with the effect on prices of the precious metals come from the Indies (and on the rate of exchange, as we shall see in lect. 3). These views must have been current knowledge at the time
- Jean Bodin (1529/30-1596), ususally credited with MS–>P in his *Response à Malestroit* (1568) but he was late, and incomplete in that he did not pay attention to the relative value of currencies
- We'll leave foreign exchanges for lecture 3

‘Real de a ocho’: pieces of eight

The silver mountain of Potosí in Perú



A world currency

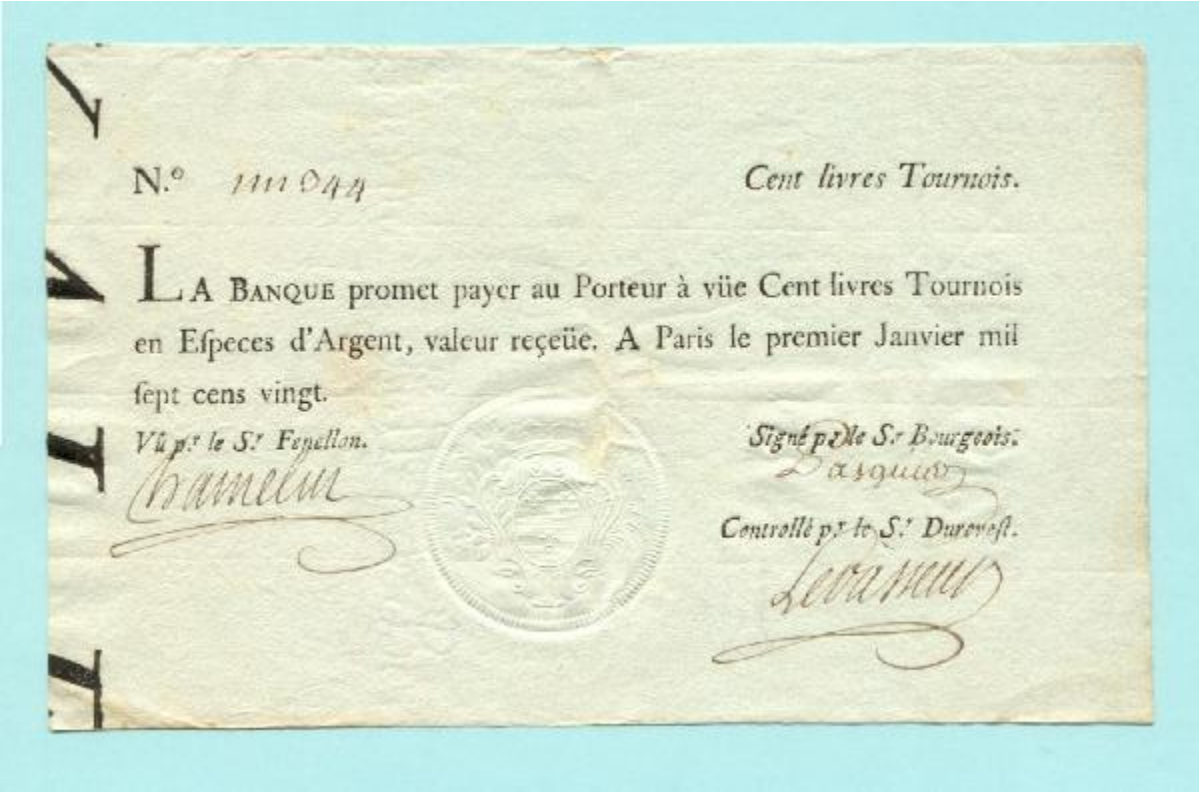
8 reales de Carlos IV de 179

A piece of eight of Charles IV (1796) over-stamped in Sudan

First attempts at *fiat* money

- I shall leave aside the distinguished contributions of Antonio Serra (*Oro e argento senza miniere*, 1613), William Petty, Locke and others, See Schumpeter *Hist.* II.6.4 on 'Quantity of money, prices and velocity'
- The 17th c. was a period of experimentation for public and private finance, connected with the growth of State power and the need to finance private investment for growth (Hoppit, 1986)
- John Law (1671-1729) was a Scottish financeer who rose to be in charge of the Treasury of France. His misadventures represent the progress and failure of a fiat monetary system.
  - His *Banque générale privée* (1716), later *Banque Royale de France* (1717) issued paper notes for silver and then in accounting money (*livres tournois)*. With the fractional reserve funds (50% reserve, 50% re-lending or investing) he launched the Mississippi Company (1718), went on to purchase the tobacco monopoly, tax farming, the whole national debt of the Kingdom! …
  - After huge speculation, the *systhème* (Bank, colonial companies, State debt) failed

A note of the Banque Royale



N.° 111044 *Cent livres Tournois.*

LA BANQUE promet payer au Porteur à vüe Cent livres Tournois en Eſpeces d'Argent, valeur reçeüe. A Paris le premier Janvier mil ſept cens vingt.

Vû p.r le S.r Fenellon.

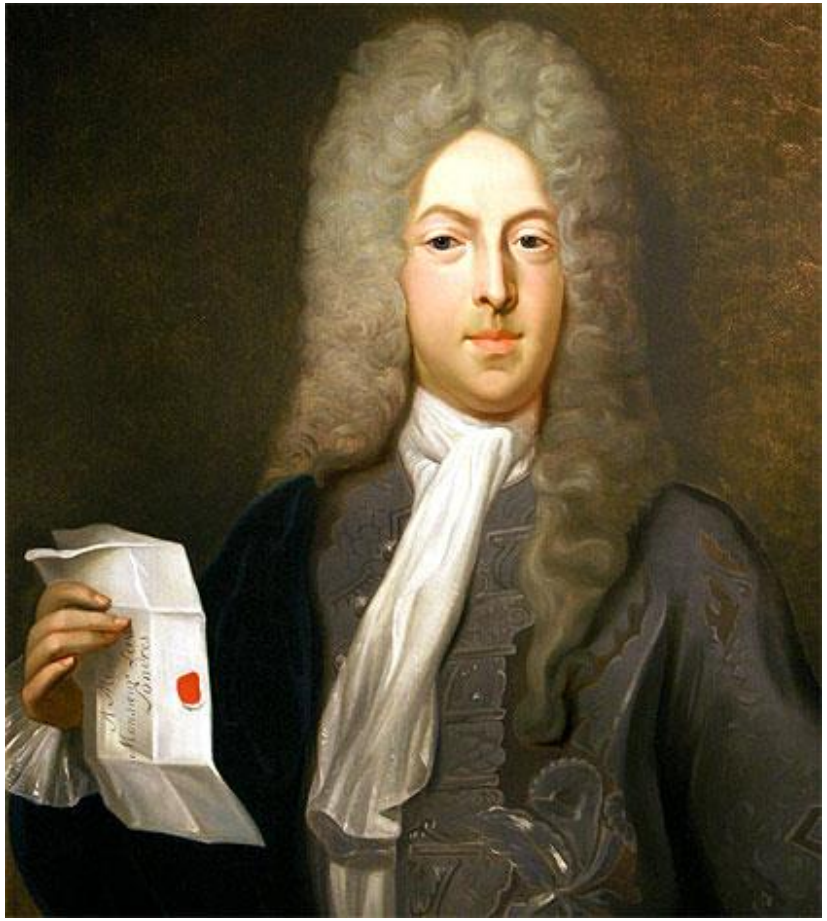
Signé p.r le S.r Bourgeois.

Controllé p.r le S.r Durevoſt.

Cantillon's bet on gold and silver

- Richard Cantillon (1680-90?-1734) was a successful and less than honest banker, a symbol of the solidity of the metallist system that would last until its demise after WWI
  - Known for his outstanding *Essai sur la nature du commerce en général* (1750)
    - Path-breaking contribution to price theory
    - Still something of a mercantilist in trade
  - Must be credited with a theory of demand for money; transmission mechanism between money and economic activity; the self equilibrating specie flow mechanism
  - Grew rich speculating against the Law system
  - Believed to have been murdered by his cook, but may have dissembled
  - Antoin Murphy (1986) presents evidence that he escapes to the Dutch West Indies after the murder

John Law and Richard Cantillon



“The big problem of small change”

- Thomas Sargent and François Velde (2003)
  - In countries where large valued coins are current, a problem was posed by the recurrent lack of small change, the only adapted to small purchases (‘penny in advance’ restriction, the authors call it)
  - It was not until the late 19th c. that the solution was discovered, thought were approximations in 17th c. Castile:
    - Small coins must be valued by tale but fully convertible to weight-valued coins
    - The issue of small (copper) coins must be limited, so that they do not bring about a price inflation and set Gresham’s Law in train, and lead to melting and export of copper coins
    - Counterfeiting, therefore, must be difficult (machine coining in Segovia)
  - On the silver small change panic of 1797 in Scotland, see G. Selgin, *Cato at Liberty* (Oct.31, 2018)
  - A first and inadvertent step towards full a fiat money system

The birth of the gold standard

- As Robert Mundell has explained in his article on Gresham's Law (1998) England moved inadvertently to the Gold Standard, when **Newton in 1717** as master of the Mint lowered the value of gold with respect to silver – and England moved onto the gold standard until 1931, with ups and downs
  - Under a bi-metallic system both silver and gold can run – up to the point when the undervalued currency disappears totally. So, in the end the undervalued currency that was silver tends to disappear: melted, sent abroad, hoarded or buried
  - Currencies fixed their exchange rate to gold because gold was overvalued!
- Fixing the same official price and debt discharge value to different value coins will tend to set Gresham's Law in motion
  - The undervalued currency will tend to disappear
  - The overvalued currency will be current (as happened with gold after Newton)
- Fixing the exchange rate by declaring one of the currencies 'legal tender' has the same effect
  - This effect also visible between paper fiat currencies

The Gold Standard period

- 1 ounce = £3/17s/10.5d as set by Isaac Newton, Master of the Mint, in 1717
- After the *de facto* suspension from 1798 to 1819of the convertibility of BoE notes these finally became legal tender and officially convertible at the same rate of 1 ounce = £3/17s/10.5d. This lasted until 1931
- The US dollar's value was fixed to gold after 1834, because silver was undervalued at 16:1 and left the country.
  - There was a period of 'greenback' inflation during the Civil War (1862-1879). In 1879 the dollar was again fixed on gold at $20.67/troy ounce but for a time greenback notes and the gold dollar circulated together. Much agitation for silver at the end of the century. In 1933 gold holdings were nationalised and expropriated. This was accompanied by the devaluation to $35per troy ounce. In 1971/73 was devalued to $42.22, the connection with gold was severed and a full fiat system installed
- From 1870-75 many European countries also moved to the a Gold Standard, importantly Germany and France, up to 1914.
- Short period of gold exchange standard between the two WW, and after Bretton Woods

How the Gold Standard functioned in the UK

- In the UK the **Gold Standard rules** were strictly kept (1819-1914)
  - Free exchange at the gold window
  - Gold points when transport and insurance from overseas were added to the exchange
  - No sterilisation of gold inflows (that is, letting the price level rise with gold holdings of the country, due to BoP surpluses).This rule was flaunted by Germany and France, and especially by the US after WWI
  - Precautionary use of the Bank rate to speed adaptation to BoP surpluses or deficits
  - As London was the main financial centre, the price of gold determined there
  - Country Banks used Bank of England notes or calls on London correspondents as their reserve
  - Slowly the BoE accepted its role as Lender of Last Resort
  - Convertibility set by the 1844 Peel Bank Charter Act was repeatedly suspended (1847, 1857, 1866, …)
    - Bordo and Kydland(1995) have a table with the world-wide suspensions in panic and war

Paper money under the Gold Standard

- David Hume (1711-1776) was wary of the growing use of bank notes as they led to the export of specie and its disappearance from circulation and said so in his 1752 essay “On Money”. Paper money is ‘counterfeit money’ for him. Especially struck by the 1772 banking and financial crisis, coming from London and English business private finance to Scotland: he wrote to A. Smith in June 1772 about people clamouring for cash
- Adam Smith (1723-1790) thought (correctly) that the issue of paper money would not influence prices as long as both kinds of money circulated
  - Paper would displace specie until the total over-flowed from the “channels of circulation”
  - Banks were a welcome addition to credit as long as they behaved properly, as the Bank of Amsterdam, and stuck to discounting real bills of exchange
  - The safeguard was the ‘reflux’ of notes

The Bullion Committee (1810)

- After the suspension or ‘restriction’ of sterling convertibility in 1797 the rate of notes to gold was pretty stable up to 1808, when the effects of the Napoleonic blockade started to be felt
- In 1809 a sharp devaluation of the pound note took place on the Amsterdam market
- The House of Commons set up a Committee to decide whether it was bad crops and remittances to allies in the Napoleonic wars, or excessive note issue by the BoE that explained the depreciation the pound note or high price of bullion
- Henry Thornton (*On Paper Credit*, 1802) was a member and David Ricardo cut his teeth on it with a number of newspaper articles on it. They both thought that it was excess issue that explained the depreciation after 1808
- Thornton accepted BoE monetary action in ‘short-run temporary emergencies’ but sustained ‘long-run permanent policy’ of a fixed exchange
- Thomas Tooke (1778-1854) on the contrary thought that the increase of paper money was a result, not a cause of price changes

David Ricardo (1772-1823) on money

- How became interested in economics
  - Reading the WoN while taking the waters
- His work on money started with the Bullion Committee
- *Proposals for an Economical and Secure Currency* (1816)
- *Plan for the Establishment of a National Bank* (1824)
  - Took the Quantity Theory as given
  - Wanted gold out of circulation
  - Gold kept as bullion bars at a given issuing public institution manged by commissioners
  - Convertibility of large notes in gold
  - The note issue of country bankers effectually nationalised and included within the new monetary institution

The Currency and Banking Schools

- The currency school directly linked to Ricardo
  - The excessive issue of bank notes the causa of price inflation
  - Baron Overstone (1796-1883)
- The Banking School underlined the possible need to review the Quantity Theory given the invention of bank notes and deposits, which changed what we call the transmission mechanisms
  - Over-issue naturally restricted by ‘reflux’ of notes if there was convertibility
  - Thomas Tooke (1774-1858) and John Fullarton (1780?-1849)
- A fixed metallic standard not sufficient to keep financial system on an even keel
- Even so the 1844 Bank Charter Act in the line of David Ricardo and the Currency School
  - Separation of the Issue Department and the Banking Department of the Bank of England
- But Lender of Last Resort, a late proposal of Bagehot’s (preceded by Thornton in 1802)

An in-between John Stuart Mill (1806-1873)

- The 1825 financial crisis and the young Mill
  - The Independence of continental LATAM was an opportunity for English exporters but Say's Law 'failed' because they had no money (or no produce) to pay for industrial imports
  - Also, the bubble in the London bond market for LATAM debt burst when the mines, taken over by the new independent governments, did not prove as immediately profitable
  - The BoE was still hesitant in its lender of last resort interventions
  - In his early writings, gathered in his *Essays on Some Unsettled Questions of Political Economy* (*1*844) he included "On the Influence of Consumption upon Production" – a reformulation of Say' Law when the accumulation of liquidity permitted people to sell without buying (for a time), but paid no attention to the securities market
- After 1844 he was happy with the suspension of the Peel Act when a financial crisis demanded it
- During his life Mill was faced, not only with the 1825 crisis but also those of 1836, 1839, 1847, 1857, 1866
- Psychological explanation of booms
  - Speculative fevers would abate when investors became more savvy
  - Paid no attention to the exit from slumps

Marshall and the Quantity Theory

- In his youthful “Essay on Money” (1871, published 1975) and in *The Economics of Industry* with his wife Mary Marshall (1879), he defined the Cambridge cash balance formulation of the QT, within a microeconomic demand and supply framework, in the tradition of Hume, Cantillon, Ricardo, Thornton and Jevons
- Five core propositions (Thomas M. Humphrey in *Elgar Companion to A. Marshall*, 2006)

1. Equi-proportionality of money and prices
2. Money-to-price causality
3. Long-run neutrality and short-run non-neutrality of money
4. Money-stock exogeneity
5. Relative price /absolute price dichotomy, attributing equilibrium of the first to real causes and of the second to monetary causes

- Despite common opinion Fisher version of QT was on the same lines as Marshall’s
  - Not Wicksell’s

Irving Fisher

- Irving Fisher (1887-1947) came to the QT through mathematical economics
- *The Purchasing Power of Money* (1911)
  - Interest: a community's preference of a dollar of present income over a dollar of future income". His was an "impatience and opportunity theory. The value of capital is the present value of the flow of net income the asset generates. He was the first to distinguish clearly between nominal and real interest rates
  - Fisher on the QT misunderstood. As Laidler shows (pgs. 68-79), he was much nearer to the Cambridge (England) interpretation than is believed
  - He saw the "equation of exchange" as a **tautology**

$$MV \equiv PT$$

within which he framed the **theory** that $P = f(M)$,

given that $dV/dt < 0$; and $dY/dt = 0$, independently of changes in M

  - The determinants of the elements of this theory were what Laidler calls 'tastes, technology and endowments; and principally habits of the individual, apart from the systems of payments if the community and other general causes

Irving Fisher on interest rates

- The real interest rate
  - The real interest rate was “an index of a community’s preference for a present dollar over a dollar of future income”
  - Equilibrium between the time preference and the investment opportunity principle
- The nominal or money interest rate
  - The real interest rate + the (expected) rate of inflation
  - The nominal interest rate only influenced the real economy in as far as individuals suffered from ‘money illusion’ (Fisher, 1928)
- Fisher was one of the initiators of index number theory. Index numbers were proposed as a basis of price level stability

Bi-metallism

- Marshall analysed different monetary policies and institutional schemes on the basis of his monetary theory he did not clearly incline for any of them
  - This was mainly due to his lack of confidence for any managed monetary policy
  - He proposed synmetallism as a politically neutral arrangement that would smoothe the effects of the price of either gold or silver. This was a standard similar to the electron of Ancient Greece
- In the US especially there was strong political resistance to the gold standard as based on the over-valuation of gold with respect to silver and its deflationary effect
  - William Jennings Bryan ‘crown of thorns’ and ‘cross of gold speech’ (1896) wanted some inflation through silver being added to legal tender
- *The Wonderful Wizard of Oz* as a skit on the gold standard by Frank Baum

JM Keynes on the Quantity Theory

For Keynes, the Quantity Theory is only valid with full employment

- Keynes's version of the QT is fundamentally non-monetary
- With unemployment, the influence of money on prices is modified (*General Theory* (1936), ch. 21
  - The elasticity of prices to a monetary expansion is unity, minus the capacity of the economy to increase production and employment, plus the induce increases in costs and wages due to the expansion

$$e = ed(1 - ee.eo + \{ee.eo\}\, ew)$$

Friedman's demand for, and supply of money

The demand for money is fundamentally stable

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

Real money demand is a function of…

- Permanent income (Y_P), expected average income over the course of one's life. (+)
- The excess return on bonds over money (-)
- The excess return on equities over money (-)
- The rate at which money loses purchasing power. Can also be thought of as the excess return on goods over money. (-)

The suppply of money is exogenous (in a closed economy or with flexible exchange rates)

Theories of inflation

- Keynes's version of the QT is fundamentally non-monetary (1936, ch. 21)
  - The elasticity of prices to a monetary expansion is unity, minus the capacity of the economy to increase production and employment, plus the induce increases in costs and wages due to the expansion
  - While there are resources unemployed, an increase in MS will result in no price inflation
  - This is the theory of inflation of central banks
- Friedman: "Inflation is always and everywhere a monetary phenomenon, in the sense that it can only be produced by a more rapid increase in the quantity of money than in output"
  - So there can be unemployment *and* inflation
  - Inflation not caused by AD>AS
  - In the end *nominal* money is neutral with regard to real production and growth
  - Though, as Adam Smith saw, *real* money is a factor of production

Transmission mechanism

Karl Brunner (1915-1989)

- A monetarist, in the sense that for him prices and inflation are a function of the growth of the MS
- Critic of the Fed for destabilizing the ecomomy (Shadow Open Market Committee with Meltzer, 1971)
  - Lack of attention to steady growth of MS
  - Excessive reliance on manipulating short term interest rates
  - Rejected governments' reliance on tax and spending policies
- Study of transmisión mechanisms (See Ireland, 2017)

The classical dichotomy

“For a monetarist or classical economist, long-run neutrality of nominal impulses is an implication of rational behavior. However, before impulses are fully absorbed, relative prices and real output respond to monetary impulses. The reason is that households and businesses fail to anticipate or perceive correctly all of the future implications of past and current actions. From a monetarist perspective, one principal reason for the misperceptions that give rise to relative price changes is that time is required to distinguish permanent and transitory impulses and real and nominal impulses. These delays in correctly perceiving the duration or type of change are part of the costs of acquiring information. Contracting in nominal terms is one response to these uncertainties.” (Meltzer 1995, pp.49-50).

Neutrality and super-neutrality of money

- Cantillon on the domestic effects of the specie-flow mechanism
- David Hume on domestic effects of gold inflows
- The classical dichotomy: Léon Walras assumed that the equilibrium of the system was indifferent to changes in the numéraire
  - Don Patinkin in his entry “Neutrality of money” (*New Palgrave*) explains the possible effects of specie flow on relative prices
  - As Hume said, changes in the absolute level of money supply are irrelevant to the automatic restoration of equilibrium (neutrality of money)
  - But the rate of change in MS does have an effect (no super-neutrality)

Velocity and expectations

- Velocity is a function of two variables
  - Secular decline as economies become increasingly monetised and bancarised
  - Short term increases due to loss of confidence in the currency

- Velocity and expectations
  - adaptive (Friedman)
  - rational (Muth, Lucas)
  - Rational expectations not only include those of the Authorities but also those of individuals in the market

Monetary heresies

- As JS Mill used to say, monetary cranks kept writing to him with new ideas to solve all problems with a new monetary arrangement
- Economics is about the real world
- Three main mistaken beliefs and the Widow's Cruise.
  - The 'Phillips curve'
  - Inflation as AD>AS
  - More recently 'Modern Monetary Theory': when inflation is quiescent, it is possible debt to increase public debt and expenditure
    - Buchanan (*Public Principles of Public Debt*, 1958) showed that foreign debt (which MMTsts consider dangerous) allows and economy to grow immediately, with a later check on growth when the time comes to return the debt
    - While national debt placed at home starts by checking growth and later contributing to it
    - The effect is the same in equilibrium