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ECONOMICS 301Y1

The Economic History of Later-Medieval and Early-Modern Europe

LECTURE TOPIC NO. 3: Supplement (Optional Reading)

II. MACRO- AND STRUCTURAL CHANGES IN THE EUROPEAN ECONOMY, 1300 - 1520

B. MONEY AND MONETARY CHANGES IN THE LATE MEDIEVAL ECONOMY

A Supplementary Lecture on Money and Coinage in Late Medieval and Early Modern Europe

ECONOMICS 301Y1:

MONEY AND COINAGE IN LATE MEDIEVAL AND EARLY MODERN EUROPE:

A Supplementary Lecture on Medieval Money and Coinage:

1. Introduction: I shall begin with some quotations:

a) **Marc Bloch:**

*Monetary phenomena are like a seismograph that not only registers earth tremors, but sometimes brings them about***.**

The study of prices, price levels, money supplies and monetary forces can certainly aid us in understanding the processes and nature of economic change; they do reflect economic changes. But are prices and monetary changes merely a veil disguising the real forces at work in the economy; are they merely a passive response to other economic changes, changes that thus induce expansions or contractions in the money supply or the velocity of circulation, changes that induce inflation or deflation? Or are such monetary factors and forces themselves independent causes of economic changes? Can they indeed be both: i.e., economic consequences that become subsequently active forces and real causes of economic change? It is important to observe here that one of the most important debates in European economic history, particularly since World War II, concerns the relative importance of REAL and MONETARY factors in what the French call *conjuncture*: secular economic trends, structural changes.[1] Most European economic historians who owe their allegiance to history rather than to economics deny any important autonomous role to money -- deny that 'money matters;' and instead argue that Real factors were the key agents of economic change. For most of them, the only real factor that matters is demographic change. Without denying the often crucial importance of real, and especially demographic changes, I agree more with Bloch that money sometimes did matter as that peculiar seismograph that sometimes produced its own earth tremors.

b) **Gilles Li Muisis (an early 14th-century abbot of Tournai)**

En monnoies est li cose moult obscure
Elles vont haut et bas, se ne set-on que faire
Quand on guide wagnier, on troeve le contraire.

[Translation]:

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[1] In this connection, the late Prof. Robert Lopez has observed that: 'Population and Prices are the twin pillars of economic history.' As we shall see demographic factors often had great significance in influencing both absolute and relative prices; but prices have to be expressed in monetary terms. Just as obviously various monetary factors had just as great significance in determining prices and price levels, and perhaps also economic trends.

'Coins are the most obscure things. Their value rises and falls, and one does not know what to do. When one thinks that he has gained, he finds the contrary [that he has lost]'.

c) **The late Professor Karl Helleiner (my predecessor here), quoting what is purportedly an old Austrian proverb:**

There are two fundamental causes of madness amongst students: sexual frustration and the study of coinage.

That should warn us off the subject entirely.

d) **Some Basic Monetary Distinctions:**

i) We must first and foremost always be careful to distinguish between the actual gold, silver, and even copper coins that are used to make purchases, effect payments, on the one hand, and on the other, the moneys-of-account as systems of reckoning or accounting to record monetary payments, to express monetary values, to relate values of goods, to register deposit of moneys.

ii) That distinction can best be appreciated by remembering the four basic functions of money:

e) The Functions of Money: for some elementary economics concerning both money as coins and money of account.

i) as a medium of exchange;

ii) standard of value -- in order to equate values of goods and services in terms of one common denominator, to express both gold and silver values in one common unit;

iii) money as a store of value, as savings;

iv) as a standard of deferred payment, in credit transactions.

2. <u>The Different Means of Payment in the Medieval and Early-Modern European Economies</u>:

At the same time, you must realize that coined money was not the sole medium of exchange in medieval Europe, the sole means of effecting payments. You must avoid the common pitfall of supposing that actual coins were used merely because the transaction was recorded in monetary terms in some account book or register. These notations represent merely the 'standard of value' function of money. Actual payment may have occurred by either:

a) **barter:** the simple exchange of goods for goods, or the exchange of goods for services, especially labour services, computed and recorded in monetary terms. And don't make the common mistake of believing in a mythical 'rise of a money economy' that displaced barter transactions. There was always, from Greco-Roman times, some form of a 'money-economy' utilizing coinage; and conversely, barter transactions continued on into modern times, even in sophisticated economies. Thus the following, still popular, stage

theory of economic development, advanced by 19th-century German economic historians (in particular Bruno Hildebrand), deeply influenced by current evolutionary theories, is patently unhistorical:

> Barter Economy (Naturalwirtschaft) ➜ Coined-Money Economy (Geldwirtschaft) ➜ Credit Economy (Kreditwirtschaft)

b) **credit:** that is, a written promise to pay at some future date, recorded on paper, sometimes notarized, but often informal. By such credit instruments in this period -- and functioning along side both coin and barter transactions, I mean specifically: *lettres de foire* or 'fair letters,' by which a merchant purchased goods at one fair and promised to pay at the next; letters obligatory, which are a form of a promissory note or I.O.U.; bills-of-exchange, by which a merchant promised to pay the sum borrowed or to pay for goods received at a later date, in another city, and in different currency; and bank money, what the Italians called *moneta di banco*, by which deposits were recorded in bank ledgers that permitted transfers from one account to another to effect payments. And finally, by the 16th and 17th centuries, actual cheques (rather than verbal commands) to effect such bank-account transfers, and banknotes. The use of the earlier credit instruments mentioned go back certainly as far as 12th-century Italy, and to the 9th century Islamic world. All related to coins; but many could be used in place of coin.

c) **European Money Supply** as a means of payment and as a foundation for moneys-of-account was largely though not entirely in the form of silver coinage. During medieval and early modern times, most of Europe operated on essentially silver based monetary systems that were supplemented by gold coinages from about mid 13th century. Much later, in the 18th century, England drifted quite unintentionally onto a gold standard: to a gold-based monetary system supplemented by silver. But that fortunately lies well beyond this course, during which most countries operated conversely on a silver standard.

3. Europe's Silver Coinages

a) **The Carolingian Monetary Reforms:**

i) To understand Europe's monetary systems in proper perspective, and the initial relationships between coins and moneys-of-account, it is necessary to go back to Charlemagne and his famous metrological and monetary reforms of ca. 790-802 A.D.

ii) He created a new pound weight that was virtually 1.5 times heavier than the Roman pound: according to Fournial, it weighed 489.6 grams (vs. 327.5 grams supposedly for the old Roman pound), which was virtually the same weight as the later *livre de Paris* (489.506 grams). But while the later Parisian pound had 16 ounces (like the English pound avoirdupois), the Carolingian had only 12 ounces, as did the old Roman pound (and

the later Troy pound).[2]

iii) From this silver pound he struck or issued 240 silver pennies.[3]

iv) For purposes of reckoning only, for accounting purposes, he also divided the silver pound into 20 solidi, or sous, or shillings. (The term solidus, in medieval Italian *soldo*, came from the late Roman gold coin, the *solidus aureus*, first struck by Emperor Constantine about 312 A.D. at 72 to the Roman pound: which provides a theoretical weight of 4.55 grams fine gold).[4]

v) This *solidus* or shilling was itself subdivided into 12 pence [denarius = Roman silver coin] so that the final set of relationships was the well-known £1 = 20s = 240d, which characterized the vast majority of silver-based money-of-account systems from then until the Napoleonic reforms (of 1795): 12 pence to the shilling, 20 shillings to the pound.

vi) According to Spufford, these subdivisions of the pound were a combination of the Gallic or Celtic method of counting 20s (thus quatre-vingt for 80) and the Babylonian-Graeco-Roman method of counting in 12s.

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[2] This weight of 489.6 grams is taken from E. Fournial, *Histoire monétaire de l'Occident médiéval* (Paris, 1970), whose arguments justifying this weight are quite complex. But this weight has been challenged by other numismatists (by even more complex arguments), who variously offer alternative weights: 408.0 g., 411.36, 459.36, and 483.33. The last is based on the supposition that the Roman pound in fact weighed 322.2 (see n. 4), and that the Carolingian pound was 1.5 times heavier. For the other weights, see the following footnote, and Willem Blockmans, 'Le poids des deniers carolingiens,' *Revue belge de numismatique et de sigillographie*, 119 (1973), 179-81. None of these critics, however, explains the origin or evolution of the Parisian pound of 489.506 grams; nor explain why its weight, readily verifiable from the surviving official metallic weights, was virtually identical to that ascribed to the Carolingian pound by Fournial.

[3] This is also disputable. The official Carolingian ordinance required that, from the minting of a silver pound, 12d be given to the moneyer in brassage and another 12d in seigniorage to the king. If the merchant supplying bullion to the mint was given 240d., then a total of 264 pence had to be struck from the Carolingian pound (ie. 240 + 12 + 12). Fournial argued that the latter *taille* (number cut to the pound) of 264 was employed; and that the Carolingian penny weighed 1.852 g. (264 x 1.8545g. = 489.60). The current predominant numismatic opinion, however, is that the *taille* was 240 (from which was subtracted the brassage and seigniorage, leaving the merchant only 216d per pound of silver). If that is true, and if the pound then in fact weighed 489.6 g., the Carolingian penny should have weighed 2.04 g. But recent numismatic analyses of surviving Carolingian silver pennies indicate an official weight of 1.71 - 1.74 grams each. With a taille of 264, that would indicate a maximum pound weight of 459.6 g.; a taille of only 240, however, would reduce that pound weight to 410.4 g. - 417.6 g.

[4] Recent numismatic evidence indicates, however, that this *aureus* weighed fractionally less: 4.48 grams, indicating a weight of 322.56 g. for the Roman pound (i.e., 72 x 4.48g.).

vii) It must be emphasized that Charlemagne himself and his immediate successors struck only silver pennies (as did English kings); they did not strike any coins, silver or gold, equal to the shilling or pound.

b) **The *Grossi:* the new heavy silver coins of the 13th century**

i) In the thirteenth century, however, new heavy silver coins variously called *grossi, gros, groten* [sing: groot], groats, all meaning large, were struck. Some (but no all) were given the face value or money-of-account value of the shilling: i.e., they generally were worth 12 of current silver pennies.

ii) The First *grossi* were issued in Genoa in 1172 (worth 4d); then in Venice in 1192 (worth 26 denari), then Florence in 1237 (*fiorino*); then Milan about 1250; in France, with Louis IX's great monetary reform of 1266 (silver *gros tournois*); in Flanders, from 1275 (the *groot*, imitating the *gros tournois*); and in England with Edward I's re-coinage of 1279 (but the English *groa*t = 4d sterling.)

c) **Factors Producing the New Silver (and then Gold) Coinages:**

i) greater commercialization of the economy with a vastly increased volume of money payments, transactions demand for money;

ii) greatly increased silver supplies from Central Europe especially;

iii) certainly as a result of coinage debasement, and what it produced, along with the other factors mentioned: namely inflation, which thus required larger coinage units as prices generally rose. Note that the new grossi precede and accompany the re-introduction of gold coinage into Western Europe, after 1252 (at Genoa and Florence).

4. <u>Debasement of the Coinage:</u>

a) **Definition:**

i) **Debasement** simply defined means to reduce the precious metal content of the coin; either *by weight* (smaller coin) or *by fineness* (by adding more copper in the alloy); or *by raising the face value*, the money-of-account or official value of the coin.

ii) However conducted, debasement generally always meant striking a greater number of coins from the mint weight-unit -- here the pound; and always a greater money-of-account value of coins from that unit, as will be shown. For this reason, because debasement was so profitable in several ways, the silver penny first struck by Charlemagne very soon lost its fixed relationship with the Carolingian pound weight of silver.

b) **Coinage debasement was, as emphasized, a prime cause of the new heavy silver coins, the Italian grossi especially, because:**

i) debasement produced serious inflation, rising price levels, which thus required higher denomination coins [as in modern Italy, utilizing 10,000 lira notes); and also because:

ii) debasement reduced both the size and quality (silver contents) of the previous coins, creating a demand for 'good' coins of restored size and fineness, of restored quality, if only for reasons of princely prestige and aesthetics. In modern times, the French achieved something similar by knocking two zeros off the old franc, so ravaged by excessive money issues and inflation, to produce a 'new franc'.

iii) debasement also rendered the (silver) coinage much less effective, or even quite ineffective, as an international medium of exchange. Chronically debased silver coinages would be highly suspect abroad and thus not readily acceptable; and at best their value in foreign trade was limited to their reduced silver bullion contents (which were costly to extract from heavily debased coins, containing so much copper).

c) **Why did medieval princes debase their coinages?**

i) A commonly given answer is to increase their money supplies in times of precious metal scarcities: i.e., to make a given or reduced quantity of gold and silver go farther, by striking more coins from that metal. But the evidence for such a conscious and deliberate monetary policy to achieve such goals is virtually absent; and debasements cannot be correlated with specific times of coinage or precious metal scarcities.

ii) Most medieval contemporaries thought that the prime motivation for coinage debasement was to increase mint revenues or 'profits' for the prince.[5]

iii) Medieval and early-modern minting were not undertaken at state expense for the public good. Striking coinage involved two specific charges that had to be borne by those supplying bullion to the mints and seeking coin in return:

(1) **brassage**, which represented the mintmaster's costs in terms of the required base metals for the alloy (copper usually), the mint dyes and other tools, and his own salary or profit; and

(2) **seigniorage [**seignorage, seigneurage**],** a princely tax on coinage, which had to cover the prince's capital costs in constructing and maintaining the mint and in employing mint wardens and inspectors, as well as provide some net revenue. Obviously both the mintmaster and the prince sought to cover fully their costs and earn a profit on minting. And for so many medieval prince, mint seigniorage was one of the very few elastic and easily manipulable sources of revenue at their command.

iv) **The chief object of debasement,** when this fiscal motive was present, was to encourage merchants,

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[5] See the comment of Nicholas Oresme (ca. 1390), a monetary advisor to King Charles VI of France (and to the dukes of Burgundy):'I am of the opinion that the main and final cause why the prince pretends to the power of altering the coinage is the profit or gain he can get from it [*est emolumentum vel lucrum quod inde potest habere*]; it would otherwise be vain to make so many and so great changes.... To get a larger profit by coining more money [of inferior quality] ... is covetousness and to the prejudice and loss of the whole community.' Charles Johnson, ed., *The De Moneta of Nicholas Oresme and English Mint Documents* (London, 1956), pp. 24, 41.

foreign and domestic, to bring more gold and/or silver bullion to the prince's mints (rather than to foreign mints); and debasements did so by offering such merchants themselves a profit by returning to them *more* coins of the same face value and *current* purchasing power (though with a reduced precious metal content) than they would receive from bullion minted by the former coin standard.

v) This can readily be seen in the accompanying table [final page of the reading list/handout] concerning the debasement of the Flemish double groot (2d silver coin) in November 1428. The debasement has increased the number of these double groot coins struck from a *marc* of fine silver from 136 coins to 154.125 coins. From that increased number of coins struck, the bullion-supplying merchant gains 17 more double groten (144 vs. 127); the prince (Duke of Burgundy) gains 1 more (3 instead of 2 double groten), while the poor mint-master has to be content with just 1/8th more (worth just 6 mites or 1/4d.) In fact, the coinage of silver greatly increased, and so did the prince's mint revenues.[6]

c) **Renforcement as the opposite of debasement:**

Sometimes, it is true, silver was restored to the coins in the opposite policy called *renforcement* (strengthening). But in the long run, all over Europe, debasements of the coinage exceeded *renforcements*, so that the overall trend was a progressive diminution of precious metal contents.

d) For a long time England was a prominent exception. Thus, with our first verifiable mint records, Henry III's recoinage of 1247, the Tower Pound (12 oz.) was being struck into just 242 pence (pennies) -- just two more than the original 240d; and with Edward I's recoinage of 1279, just 243 pence. By the accession of the first Tudor in 1485, however, 450 silver pence were being struck from the Tower Pound.

e) To repeat the important point: because of debasement, silver coins lost their direct relationships with the original pound weight of silver, or with other mint weight units; and as will be shown, most money-of-account systems correspondingly severed their relationships with the original mint-weights, by *remaining tied* to the now more and more debased silver coinages.

5. The Problem of Gold

a) Gold coins had been struck only sporadically in the early medieval West; and those were usually limitations of the Byzantine *aureus*, or as it was also called *bezant, nomisma, hyperper*, and *perperi*, which, along with the later Muslim *dinars*, Lopez called the 'dollars' of the early Middle Ages. The last of these

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[6] In 1427-28, the Flemish mints coined only 4,598.7 silver marcs (= 1,125.55 kilograms of commercially fine silver); but in 1428-29 they coined 72,460.7 silver marcs (= 17,734.97 kg.). See John Munro, *Wool, Cloth, and Gold: the Struggle for Bullion in Anglo-Burgundian Trade, 1340-1478* (Brussels, 1973), Table B, p. 191.

early-medieval Byzantine style gold coins was struck in the West was by Louis the Pious in the early 9th century.

b) From then until the mid-13th century, only a few gold coins were struck in Europe, along the periphery of the Muslim world; and they were indeed imitations of the Muslim dinars: in Sicily, Catalonia, and Castile. (Perhaps most famous are the Sicilian *augustales* of 1231).

c) Apart from a possible issue of a Genoese gold coin around 1200, evidently abortive, the effective resumption of gold coinage in the West comes in 1252, with the almost simultaneous issue of the Genoese gold *genoin* or *genovin* and the Florentine *florin*. Then followed the English gold *penny* of Henry III in 1257 (worth 20d.); but it was abortive. More successful were the French *écu* of 1266, issued as part of Louis IX's great monetary reform of that year; and especially the Venetian *ducat* of 1284-85. England, under Edward III, tried to resurrect a gold coinage with the *florin* of December 1343, but only succeeded, and then splendidly, with the gold *noble* of 1344 (altered in 1351, but remaining stable for the next 60 years, until 1411-12).

d) **The two dominant gold coins of the later Middle Ages were the ducat and the florin, reflecting the immense commercial power of Venice and Florence respectively.** The ducat was especially important because it retained its original weight and purity (virtually 24 carats) from the first issue in March 1285 until the last issue in 1797. The Florentine florin did suffer some minor weight loss in the 14th and early 15th centuries; but in 1435 it was restored to its original full weight, remaining unchanged until 1533, when it ceased to be issued. Both coins were widely copied from the 14th century. Perhaps the most important was the Rhenish florin, or florin of Four Electors of the Rhine (gulden), struck from 1354. The Rhenish florin, the English gold noble, and the French écu (shield) served with the Italian florins and ducats as the chief mediums of international exchange in northern Europe; but only the Italian ducats and florins deserve to be called the 'dollars' of the later Middle Ages.

e) **<u>Reasons for the resumption of Gold Coinages in the West</u>**

i) First one can cite all the reasons given for striking the new silver grossi from early 13th century: the vast increase in the volume of money payments and transactions demand for money; the debasement of silver coins; the inflations.

ii) Reflects shift of economic power and political prestige from the East to the West: especially with the economic decay and political convolutions of both the Byzantine and Islamic worlds from the late 11th/12th centuries; and the consequent debasements of both Byzantine *nomisma* and the Muslim *dinars*, which thus undermined confidence in them.

iii) Conquest of Constantinople in 4th Crusade, 1204 (and the subsequent Venetian-dominated 'Latin Empire'

to 1261): no Byzantine gold coins were struck, except a few in the neighbouring rump empire of Nicea.

iv) **The Crusades:** growing hostility to the Muslim world in the 13th century may have made it more awkward to use figured Islamic-style coins.

v) Greatly increased gold supplies in the West: from gold mining in Bohemia and Hungary, and especially from Genoese trade surpluses with North Africa and Palestine. African gold from the Niger-basin was the most important (crossing the Sahara to Mediterranean ports).

vi) Changed metallic ratios between East and West: all the factors that Professor Watson has outlined that made gold favoured and relatively more abundant in the West, and conversely silver more favoured and abundant in the Islamic East. Gold flows to the West thus have to be seen also in terms of balancing silver flows to the East.[7]

f) **Consequences:** While there was never a totally strict division in the use of the two metals, it is fair to say that the following division of labour generally prevailed:

i) **Silver:** was almost the chief metal for local, domestic, even regional trade, certainly for retail trades; for payment of wages and salaries. Even smallest gold units had too large a value for such payments.

ii) **Gold:** was the favoured medium for international trade, high-value transactions, diplomatic subsidies etc. because it was much cheaper to ship in proportion to its value. Normally ratio of 10:1 to 14:1.

g) **Bimetallic Problems:** even if Europe did not really have a true bimetallism, gold and silver were still of course exchangeable one for the other (and indeed both gold and silver were used for some aspects of both regional and international trade). Thus a problem that the ratio of values of gold and silver in one country (or from one country's mint) would not be the same as in another. That could cause some dislocations in a variation of Gresham's law, whereby silver would go where it was the more highly valued and gold to where it was conversely the more highly valued. Such movements of precious metals could result simply from such arbitrage trade, and have no real relation to international trade in goods and services.

h) Did Northern Europe's pro-gold policies of the 14th and 15th centuries produce such an exodus of silver as to produce a problem of monetary contraction? For silver not gold was real basis of the domestic economies: the foundation for most money-of-account systems, for payment of wages and salaries, for most local retail trade. Thus in England the smallest English gold coin was the quarter-noble or ferlin worth 20d.; and most gold circulation was in the form of the full noble worth 80d or 6s 8d. Most highly paid skilled artisans -- masons, carpenters, etc.-- earned only 6d. per day; gallon of ale cost less than 1d; and a sheep cost

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[7] Andrew Watson, 'Back to Gold -- and Silver', *Economic History Review*, 2nd ser., 20 (1967), 1-34.

just a shilling (12d.). In such an economy, gold coins were of little use for domestic trade.

6. <u>Moneys-of-Account:</u>

There are six basic types, which may be classified under two major categories, which in turn might be called 'ghost' and 'real' moneys.

I. A Type of Moneys: The 'Ghost Moneys':

Moneys-of-account which were tied to and calculated according to the precious metal content of some famous, once highly favoured coin of the past that no longer circulated: hence a 'ghost money' (a term used somewhat differently by Carlo Cipolla). The chief point here is that the money-of-account was tied to, fixed in terms of a constant weight of precious metal. Reckoning in these terms was the same as reckoning in bullion, and so protected the merchant or creditor from the ravages of debasement-induced inflation.

(1) **Systems Based on fixed silver weights.**

Example: In the medieval duchy of Brabant, in the Low Countries [in modern-day Belgium], in the 14th and early 15th centuries: the *livre de vieil (vieux) gros*, or *pond oude groot* [= pound of old groten]. The 'old gros' referred to here is the famous *gros tournois* struck by Louis IX in his veritable monetary revolution of August 1266. The coin was struck at commercially fine silver (12 deniers *argent-le-roi* = 23/24 = 95.833% pure silver) at 58 cut to the marc = 4.220 grams weight, with 4.044 grams pure silver. (Originally to equal 1 sous or 12 deniers tournois in France). Originally, 240d or a livre (pound) of gros tournois contained 970.56 grams of silver; but, with some subsequent debasement, rather less in the 1330s, with the final issue of gros tournois. This money of account was devised or invented in about the mid 14th century to protect merchants against the ravages of drastic coinage debasements and inflations in Brabant: i.e., to tie payments to a fixed and known quantity of good silver. So this was a 'ghost money' in the sense that this gros-based money of account continued to be used into the 15th century, fixed in silver values, long after the actual gros tournois coin itself had ceased to circulate.

(2) **Systems based on fixed gold weights, based on 'ghost' gold coins.** An example similar to the silver *livre de vieux gros* above is the *livre de vieux écus*, or the *pond oude schild* (in Flemish), also used in 14th and early 15th century Brabant. It was based on the gold *écu à la chaise* (in Flemish *schild* = shield): as struck by King Philip VI of France in January 1337, at 24 carats fine gold, 34 to the marc = 4.532 grams fine gold; and based also on a similar écu struck by the Holy Roman Emperor Louis of Bavaria, at the same time. The *écu à la chaise*, it should be noted, was debased by King John II in 1351; and then was superseded by the more famous *écu à la couronne* of Charles VII in March 1385. But the original money-of-account continued on; and indeed it became tied in the 14th century to the *livre de vieux gros* at the fixed ratio of 16

1/2d. oude groot to the *schild*. That meant a gold:silver ratio of 14.723 to 1 [16.5 x 4.532]. That ratio became quite unrealistic by the late 14th century when the market ratio was more like 9.5:1.

II. B Type Moneys:

The 'Real Moneys:' moneys-of-account that were based on and directly tied to a currently circulating coin, even though such coins were or might be subject to periodic coinage debasements or depreciations -- i.e., loss of their precious metal contents (again explaining the occasional use of A-type moneys-of-account).

(1) **Systems tied directly to the current silver penny** (denier, pence). This was by far the most common system in Western Europe and was almost universal for local trade, for payment of wages and salaries, if not necessarily for wholesale and international trade and financial transactions. It is bound to be the system you will likely run into in your research, and certainly in the literature.

a) **Variable Value Silver Coin Systems:**

The most common of this variety, by far (and thus the most common money-of-account overall). Some famous examples are the pound sterling of England (until recently), the livre tournois and livre parisis of France, the livre gros (pond groot) of Flanders, the *lira a denaro piccioli* of Florence, the *lira* Genoese, etc. Now with such a system, 1d. money-of-account always equalled in value the currently circulating silver penny; and so one shilling (sous) = 12 such pence; and one pound = 240 pence. The key point is that any debasement of the coinage automatically meant exactly the same depreciation of the money-of-account; and if the silver coins lost 20% of their pure silver content, were debased 20%, the money-of-account evaluation of a pound weight or marc weight (approx, 8 oz. = 244.753 g.) would rise by the reciprocal of the coinage change, namely 25% here: 1/0.8 = 1.25

The proper formula to express this is:

$$[(1 / (1 - x)] - 1$$

in which x represents the percentage reduction of the silver contents (by weight or by alloy, or both) in the silver penny and thus in the unit of account.

[See the accompanying table on the debasement of the Flemish Double Groot in 1428.]

b) **Fixed Value Silver Coin Systems:**

A modern example from Holland: is the bank *florin* of the Wisselbank van Amsterdam (1 bank florin = 20 *stuivers*, as shillings; but the *stuiver* was originally the Flemish *double groot*, i.e., worth 2d gros). It was based on a fixed silver weight of a reformed coinage as determined by a monetary ordinance of the States General of the United Provinces in 1619, strengthened (with more silver) in 1681. Thereafter, the actual silver stuiver and florins remained stable, and thus the bank florin remained fixed at that silver value (9.56 grams of fine silver) until the Wisselbank would up its affairs in 1822, 200 years later. (This florin or guilder

was used simply for reckoning or accounting purposes in the Wisselbank: all merchants who deposited coins, bullion, and paid bills-of-exchange into the bank were credited with values reckoned in these florins.)

(2) **Systems tied to Gold Coins:** of two types

a) **Fixed value gold coin systems:**

i) **The Venetian ducat and the Florentine florin:** the best examples are the moneys-of-account based upon the gold ducat which retained its full purity of 24 carats and its weight of 3.560 grams from its initial striking in March 1285 until the French invasion of 1797; and upon the Florentine florin, from 1252-1533, disregarding minor weight reductions in the later 14th and early 15th century. In this system, the ducat or the florin, which may be viewed as a 'pound,' was subdivided into 20 shillings, and each shilling into 12 pence, as in the standard systems. This system is essentially the same as type A.2, since the money-of-account is tied to a fixed quantity of fine gold. The only difference is that the coin constituting the foundation of the system actually exists and circulates. But then in 1517 the ducat was almost surreptitiously transformed into a type B.1 system: that is, it became fixed at 6 lire 4 solidi (£6 4s 0d) Venetian, and was thus really a silver based money-of-account system whose value varied directly with the value of the Venetian silver penny, to which it was tied. That is not the only example of the transformation of a fixed-value money-of-account into a variable-value system.

ii) **The other Florentine florin money of account:** the *affiorino.*

Unfortunately for modern historians, Florence also utilized another florin money-of-account, which was originally silver based, in the 13th century. It was tied to the silver florin, or *fiorino,* the Florentine grosso struck from 1237 to represent the shilling (worth 12 denari, *a soldo di piccioli*). Thus when the gold florin was first struck in 1252, it was worth 20 current silver florins -- i.e., to be the pound or *lira* worth 20 shillings. The silver florin, however, subsequently underwent some debasement; and when it ceased to be issued in 1279, it then took 29 such silver florins to equal the value of the gold florin. Thereafter, with no more silver florins issued (and ceasing to circulate in 1296), this money-of-account became tied to the gold florin at the fossilized and permanent rate of 29s (i.e., old silver florins) to the gold florin. Furthermore, to increase the confusion, sums of money or values expressed in this money of account, called *affiorino*, in terms of this particular florin, were usually expressed in pounds, shillings, and pence (*lira, soldi, denari)*:

> For example, £35 6s 8d *affiorino*. To convert this into current gold florins, calculate the total number of shillings the sum represents and divided by 29 (29s. per gold florin): 706.667 ÷ 29 = 24.368 gold florins. Had this sum been presented as £35 6s 8d *fiorino doro*, then it would have been worth 35.33 gold florins.

Thus, if you are working in Italian or especially Florentine history, you must be absolutely certain what

florins you are dealing with. Appearances can be damagingly deceiving, as examples of the next type will also show.

b) **Variable-value gold coin systems:** that is, systems based on currently circulating gold coins that were subject to periodic debasement (in both fineness and weight). This system was therefore similar in nature to the type B.1 silver-based systems -- but with gold, not silver. One of the most prominent and famous of such systems was that based on the Rhenish florin (the florin of the Four Electors) or the *Rijnsgulden*, which originally had been a copy of the Florentine florin. From its inception in 1354 until 1490, this gold coin lost 27.1% of its gold content [from 23 1/4 carats to 18 ½ carats; from 66 struck to the Cologne Mark to 71 1/3 to the Mark]. But from the time it came into prominence as the basis of a money-of-account in the early 15th century, from 1419 to 1490 to be exact, the coin lost only 9.00% of its gold content [from 19 to 18 ½ carats, from 67 to 71 1/3 to the Mark]. And from 1490 to its last issue in 1626 it remained perfectly stable; and thus had reverted to a type B.2.a money-of-account with a fixed value. As it was used in the treasurers' accounts of various towns of the Low Countries (adjacent to the Rhineland) in the 15th century, it could be a clumsy system of reckoning. For example a tax receipt of 20 gulden, 25 plakken, and 7s 6d. 'payment'. The *plak* was the Brabantine silver penny; and the 'pond payement' was an old silver money-of-account now tied to the Brabantine silver plak at the rate of 24s 0d. to the plak.

Example:

> Let us now suppose that the current (1410) silver value of the Rhenish florin-gulden is 33d groot (i.e., 33 plakken). That tax receipt thus becomes 20g. + (25/33g. + 7s 6d/24/33) = 20g. + 25/33 + 7.5/24/33g. = 20g. + 0.75758g.+ 0.009469g. = 20.767 Rijnsgulden = £2 17s 1.3d groot.

It is worth remarking that between 1408 -- when this system was first introduced into the Leuven treasurers' accounts -- until 1435, the silver evaluation of the Rijnsgulden in the accounts rose from 33d to 72d gros. Thanks to both a stable silver coinage in the Low Countries from 1435 to the 1460s, and a relatively stable Rhenish florin, this money-of-account system was itself stable during those years.

But then we note, in the Leuven treasurers' accounts, that after 1460 the Rijnsgulden is reckoned at the invariable ratio of 1 gulden = 20 stuivers = 60d. (with 1 stuiver = 3d. gros of Brabant or = 2d. gros of Flanders). Since we know that the silver coinage was quite drastically debased from 1466, this money-of-account system has therefore shifted surreptitiously from being a type B 2.b system to a type B.1 system (i.e., but still both in the B system). This is no longer a variable-gold based system, but henceforth in fact a variable-silver based system. Since the gulden is now tied to the current silver penny, of fluctuating values, this money-of-account is simply tied also to the more prevalent *livre gros* or *pond groot* system. That is, it was always worth 40 Flemish gros, and thus 1/6 of a Flemish pound groot (6 x 40 = 240d.) At this time, with

monetary unification in 1435, the Brabantine *pond groot* was tied to the Flemish *pond groot* at the ratio of 3:2, i.e., as indicated with the stuiver, 3d. Brabant = 2d. Flemish; and the florin or gulden money-of-account thus worth 60d. Brabant and 40d. Flemish gros.

7. Money and the Equation of Exchange (Fisher Identity):

a) The Fisher Identity and the Equation of Exchange:

The relationship between monetary and real factors, involving the basic functions of money, can be seen in the following equation, the famous Equation of Exchange of the American economist Irving Fisher (in *The Purchasing Power of Money*, 1901).

The Fisher Identity (Transactions Approach)

$$M.V = P.T$$

M = stock of money in coins, banknotes, current-account bank deposits and other credit instruments

V = velocity of circulation; average annual turnover of a unit of circulating money effecting exchanges within the market in the course of a given year.

P = level of prices, expressed in a price index

T = the volume of monetary transactions that have been effected in same time period.

b) Some more modern alternatives to the Fisher Identity:

i) Since it seems impossible to calculate any meaningful number to represent the total volume of transactions (which involves a lot of duplicate counting from intermediate to final goods), since it is difficult to add up oranges, apples, and lemons, etc., most economists prefer to adopt the Incomes approach to the economy: to substitute y for T, with y representing real net national product and thus real net national income, which can be calculated. Note that the capitalized form Y = Consumption + Investment + Government Expenditures + Net Exports (Exports minus Imports), at current, nominal prices. Or, in the usual equation form: **$Y = C + I + G + (X - M)$**.

ii) Thus y is a deflated measure of real net national income, in 'constant dollars' (representing the dollar value of some given past year, considered to be the 'base' year): i.e., to eliminate any changes produced since then by inflation. Hence, to rewrite the original Fisher Identity from its 'Transactions' form to the new 'Income' form, we have:

$$\mathbf{M.V \equiv P.y}$$

P.y thus must equal Y: i.e., as above, the net aggregate or net national product and net national income in

current, nominal dollars (or some other money-of-account unit). You can best approach this, therefore, by taking the frequently published figures for the Gross National Product, and then deducting from that figure the estimated expenditure on replacing depreciated, worn-out, obsolescent capital stock, to arrive at the proper figure for Net National Product.

iii) Many economists, furthermore, do not like employing the term Velocity, which they regard as analytically useless, on the grounds that: it can be computed only by knowing the values of the other three variables; that it merely measures a consequence of changes. Some Cambridge economists led by Pigou, following World War I, asked the more interesting question: what proportion of the total monetary value of aggregate transaction does the public wish to hold in the form of cash balances, ready cash, to effect day to day transactions in particular? To indicate such a proportion (a fraction) -- the ratio of money stock to total spending or national income -- they assigned the letter value 'k'.

The Fisher Identity was thus recast as follows:

M = P.k.T (where T is again the total volume of transactions; M is the total stock of money available; and P is the price level or current price index.) For the reasons given above, that formula would now be restated as: M = P.k.y

iv) Mathematically, this is identical to the Fisher Identity, because the Cambridge 'k,' the proportion of total spending (or, in M = Pky, the proportion of national income) held in cash balances, is in fact always the reciprocal of Fisher's V: k = 1/V; V = 1/k.

v) From this, other Cambridge economists, culminating with the famous Lord Keynes, asked more probing questions on why people wish to hold cash balances, to develop the theory of Liquidity Preference. The chief reasons for holding cash balances (for wishing 'to be liquid'), instead of investing the equivalent sum, are usually stated as:

(1) the transactions motive: cash held on reserve to effect day to transactions (in buying groceries, etc.)

(2) the precautionary motive: to have ready cash on hand for sudden and unforeseen emergencies.

(3) the speculative motive: to have read cash available to take advantage of good investment opportunities that suddenly, or unexpectedly arise.

Note: There is a cost to holding idle cash balances: namely, the foregone interest or other income derived from productively investing that sum. This a cost that economists call an 'opportunity cost' -- as in the cost of doing A is foregoing the benefit derived from doing B.

vi) Logically, the modernized Cambridge approach -- in the form M = P.k.y – is preferable to the sanitized Fisher Identity; but since you will almost never see the former, but usually always the latter in the economic history literature, content yourselves with understanding:

$$M.V = P.y$$

d) **Note the following from this identity:**

i) there is nothing causal in this identity, which is purely tautological, simply stating that total spending in terms of M * V must always equal total spending, in terms of P * y (or P *T). Hence this identity must always be true.

ii) Fisher, and many before and after him, however did mean this equation to be causal, for they believed in the Quantity Theory of Money: namely, that any change in the money supply would automatically result in a proportional change in the price level. Thus, for example, a 10% increase in the money supply would automatically produce a 10% rise in the general price level. The basic assumption here is that the economy is already at *full employment*, so that T or y (Transactions or Net National Product) cannot be increased; and further that Velocity is fixed or invariable in the short run. If those conditions in fact pertained, then mathematically indeed a 10% increase in the money supply should produce a 10% inflation. But such conditions rarely if ever hold; and an increase in the money supply can or may be accompanied by some combination of the following: an increase in real national income (y), by changes in Velocity (which may go up or down), and by some increase in the price level -- but almost <u>never</u> a proportional increase in prices.

iii) This identity is not purely monetary, and necessarily includes the important <u>real</u> variable, whether called T (total volume of transactions) or y (real net national product or national income). Note therefore that any changes in y (or T), directly or indirectly resulting from changes in M.V, will also be reflected in changes in the price level: and thus that changes in the price level are never purely monetary.

iv) It is entirely possible that autonomous changes in national income can induce changes in the production and distribution of both precious metals and credit, i.e., the effective money supply, and almost certainly some changes in monetary circulation: i.e., those forces changing net national income will generally also alter M and V.