

2. Natural Hierarchy of Money

Always and everywhere, monetary systems are hierarchical.

One way that economists have tried to get an analytical grip on this empirical fact is to distinguish *money* (means of final settlement) from *credit* (promise to pay money, means of delaying final settlement).¹ This is fine so far as it goes. But in one sense it doesn't go far enough because it posits only two layers of the hierarchy. And in another sense it goes too far because what counts as final settlement depends on what layer we are talking about. What looks like money at one level of the system looks like credit to the level above it.

I.

To see this point more clearly, think about the monetary system under a gold standard and think not about money and credit in the abstract but rather about the concrete financial instruments gold, currency, bank deposits, and securities.

A Simple Hierarchy



In such a world *gold* is the ultimate money because it is the ultimate international means of payment. National *currencies* are a form of credit in the sense that they are promises to pay gold. National currencies may be "*backed*" by gold, in the sense that the issuer of currency holds some gold on hand, but that doesn't mean that these currencies represent gold or are at the same hierarchical level as gold. When a currency is backed by gold reserves, it is still a promise to pay, just a more credible promise to pay because the presence of reserves makes it more likely that the issuer of currency can fulfill on the promise if called upon to do so.²

Farther down the hierarchy, bank *deposits* are promises to pay currency on demand, so they are twice removed promises to pay the ultimate money, and *securities* are promises to pay currency over some time horizon in the future, so they are even more attenuated promises to pay. The credibility of these promises is an issue here, just as in the case of national currencies, and here as well reserves of the various instruments that lie higher up in the hierarchy can help to enhance credibility.

¹ Just so, Ralph Hawtrey's *Currency and Credit* (1923).

² National currency is not in general a "cloakroom ticket" representing ownership of gold that is being held somewhere on behalf of the currency holder. This is true even in the extreme case of 100% reserves (or a currency board arrangement). Even in such an extreme case, there is still a promise to pay, a promise that can be broken.

In this hierarchy, where is the dividing line between money and credit? It is tempting to draw the line between currency (and everything above it) as money, and deposits (and everything below it) as credit. The source of this temptation is the institutional fact that currency is the final means of settlement for domestic payments. Just so, for a bank settling its accounts at the end of the day, currency or “high-powered money” is certainly the means of settlement.

But things look different farther down the hierarchy. For ordinary people like ourselves, bank deposits are the means of settlement. Hence we might be inclined to view deposits (and everything above them) as money, and securities as credit. This is more or less what most modern textbooks mean when they speak of the money supply, although even here there is some ambiguity which is reflected in the various definitions of money: M1, M2, M3 and so forth.

And things look different farther up the hierarchy as well. For a country settling its accounts at the end of the day, national currency is of limited value. What other countries want is their own currency, or the international means of settlement, which means gold in the case of a gold standard, perhaps SDRs (Special Drawing Rights at the IMF) in the modern case. (The US is an exception because of the international role of the dollar.)

The point to hold on to here is that what counts as money and what counts as credit depends on your point of view, which is to say it depends on where in the hierarchy you are standing. Are you thinking of the problem of international settlement, of bank settlement, of retail settlement, or what? Best therefore not to reify the concepts of money and credit, and to rest instead with the more general idea that the system is hierarchical in character.

That point established, I need to remind you that, even with four layers, the hierarchy we’ve been talking about is much simpler than that in the real world. In the real world we see many more layers, and finer gradations in the hierarchy. Just so, a minute ago I used currency and high-powered money as synonyms (four paragraphs up), but they are not actually the same thing. (High powered money includes not only currency but also deposits at the central bank.) I also treated the category of bank deposits as homogeneous but it is not--there are different kinds of deposits, and also some deposit-like things (MMMF accounts) that are not the liability of any bank at all. The category of securities is, if anything, even more heterogeneous, encompassing promises of various maturities, credit quality, and so forth. All this just reinforces the point that we want to avoid sterile debates about what is money and what is credit, and stand instead on the point that the system is hierarchical in character.

II.

So far we have been thinking about the hierarchy as a matter of the qualitative difference between various financial *instruments*. It is illuminating to shift now and see the hierarchy from the standpoint of the various financial *institutions* that issue the instruments.

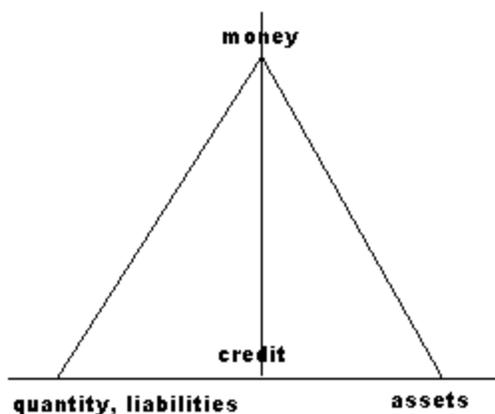
The Hierarchy in Balance Sheets

Central Bank		Banking System		Private Sector	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Gold	Currency	Currency	Deposits	Deposits	Securities

To keep things simple, I have noted only the instruments we have already been talking about, so there are important entries missing: government debt as the most important asset of the central bank, loans as an asset of the banking system, and securities as an asset of the private sector. For present purposes, the important point to appreciate is that all of the instruments except gold appear as both assets and liabilities. They are thus clearly all forms of credit. If we were to consolidate all three balance sheets in order to treat the economy as a single aggregate entity, all forms of credit would appear as both assets and liabilities, and hence cancel. Only gold would remain because only gold is an asset that is no one's liability.

More generally, the difference between gold and other forms of money is the difference between "outside" money and "inside" money, an analytical distinction first proposed by Gurley and Shaw in their seminal 1960 Money in a Theory of Finance. Actually, Gurley and Shaw treated currency as outside money and deposits as inside money because they aggregated only over the private economy, not including the government sector. So from their point of view currency as well as gold appears to be an asset that has no liability counterpart. In this course, by contrast, we will typically be thinking about the entire economy, even the entire world economy, so all financial assets will be inside, including currency. Once again, what counts as money and what counts as credit depends on your point of view. In this course we are taking a global view.

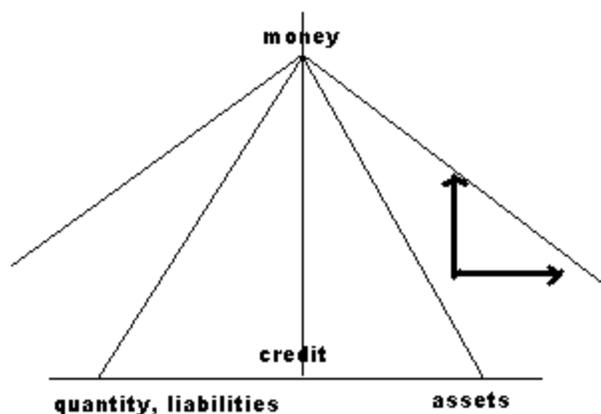
To consolidate the idea of an "inside" asset, it may help to visualize the hierarchy as a symmetric pyramid rising on a credit-to-money axis from a line centered on zero, so that net outstanding credit at any level is zero. I place the peak of the pyramid at zero even though there is a positive quantity of gold, simply to emphasize that that quantity is vanishingly small compared to the vast edifice of credit below. From the point of view of the system as a whole, every liability is someone else's asset. These credit forms cancel if we consolidate, but such consolidation misses the entire point. Macroeconomic variables like interest rates and GDP are affected not by the outstanding gross quantity of inside credit, and also by who is issuing it, who is holding it, and where that credit lies in the larger money-credit hierarchy. (Standard macro models simplify by focusing entirely on some measure of the outstanding quantity of money, which they usually treat as an outside asset.)



III.

If we focus our attention on the hierarchy for any period of time, one thing becomes immediately clear, which is that the hierarchy is **dynamic**. At almost any time scale you care to examine, it is a system in motion. Focus your attention on daily clearing and settlement, on the business cycle frequency, or on the longer term secular scale, and you'll see constant flux: daylight overdrafts, credit cycles, wars and depressions. At every time scale, we see expansion and contraction of the hierarchy. As it expands, the hierarchy flattens and the qualitative difference between credit and money becomes attenuated, but then the system contracts and the hierarchy reasserts itself. At the business cycle frequency, the phenomena surrounding this contraction and reassertion are grouped under the headings "irrational exuberance" in the expansion phase and "financial crisis" in the contraction phase.

We can distinguish two sources of this fluctuation. First, and most simple, is the expansion and contraction of the *quantity* of credit, which takes place at all levels of the system. Second, and more subtle, is the fluctuation of the "moneyness" of any given type of credit. In this respect, the *quality* of credit tends to increase during an expansion, and to decrease during a contraction. To some extent we can observe this qualitative fluctuation directly as fluctuation in the availability of credit to marginal borrowers. (More generally we observe fluctuating credit spreads between the rates charged to qualitatively different borrowers, i.e. price.)



Whatever the underlying cause of fluctuation, we can usefully think of it as involving a swing from *scarcity* to *elasticity* and back again. At all times, the monetary system can be characterized by the balance between these two dimensions.

The history of monetary theory is to a large extent comprised of a dialogue between two points of view, often distinguished as the Currency School versus the Banking School, which emphasize respectively the importance of scarcity and the importance of elasticity. From the point of view I have been developing, both have part of the truth but neither has it all. Thus, liquidity is at the same time both naturally scarce and naturally elastic. How can this be so?

The Scarcity of (ultimate) Money	↔	Currency Principle
The Elasticity of (derivative) Credit	↔	Banking Principle

The natural scarcity comes from the fact that agents at any particular level in the hierarchy cannot by their own actions increase the quantity of the forms of money at a higher level than themselves. Just so, governments cannot increase the quantity of gold, and banks cannot increase the quantity of government currency. The availability of money thus serves as a constraint that holds the system back in its attempts to expand.

The natural elasticity comes from the fact that agents at any particular level in the hierarchy can, by their own actions, increase the quantity of forms of credit at their own level, and possibly also below them. If you and I want to make a trade and you are willing to accept an IOU from me, then we can trade and what makes the trade possible is an expansion of credit. The elasticity of credit thus serves as an element of freedom that facilitates breaking loose from any constraint that may be standing in the way of expansion.

This natural elasticity applies to banks as well. By trading among themselves, banks can and do break loose of the constraint of central bank reserves. The important point is that the system involves at all times a balance between discipline and elasticity, with sometimes one and sometimes the other serving as the more dominant feature.

IV.

I have used the word “natural” in my title, and now I want to explain why. I use it to emphasize that the hierarchical character of the system, and its dynamic character over time, are deep features of the system. The institutional organization of the monetary system is hierarchical because of this underlying feature, not vice versa. That is to say, the hierarchy is not something imposed from the top down, e.g. by the government or the central bank. Monetary systems are naturally hierarchical, from the ground up. This is probably a controversial point of view, so I had best be careful to explain what I mean. (I do not mean to suggest that the monetary system is self-organizing in the sense meant by some Austrian thinkers, as Menger).

Rather I think of the institutional organization of the monetary system as inherently involving a system of **market makers** at different levels of the natural hierarchy. The term “market-maker” may be familiar to you from finance since a security dealer is a kind of market maker. A security dealer stands ready to buy or sell a security at a given price (actually two prices, the buy-sell spread) in terms of money. He does this by holding an inventory of both securities and money (actually an inventory of credit instruments that provide access to inventories of securities and deposits held elsewhere, i.e. *repos* and *reverse repos*).

I propose to think of banks as a special kind of security dealer that stands ready to buy or sell a deposit at a given price (now only one price) in terms of currency. And I propose to extend the idea also to the central bank which, under a gold standard, stands ready to buy or sell currency in terms of gold. Both banks and central banks are thus like specialized types of security dealers. We’ll develop this point in much more detail later on in the course.

For now, thinking of our simple hierarchy of money, the point is that there is a simple hierarchy of market makers to go along with the hierarchy of instruments. And for each market maker, there is an associated price of money. The prices in the simple hierarchy are three: the exchange rate (the price of currency in terms of gold), par (the price of deposits in terms of currency), and the rate of interest (the price of securities in terms of deposits or currency, assuming par). These prices are the *quantitative* link between layers of *qualitatively* differentiated assets. At any moment in time, markets makers are straddling two layers of the system, with one leg in one layer and the other in another. More accurately, the two legs are the two sides of the market-maker’s balance sheet.

Simple Hierarchy of Market Makers

<u>Asset</u>	<u>Market Maker</u>	<u>Price</u>
Gold	Central Bank	Exchange Rate
Currency	Banking System	Par
Deposits	Security Dealers	Interest Rate
Securities		

If the market makers do their job well, we will observe continuous markets at the various prices of money. In other words, the qualitatively differentiated hierarchy will appear as merely a quantitative difference between various financial assets. It is this transformation from quality to quantity that makes it possible to construct theories of economics and finance that abstract from the hierarchical character of the system (as most do). But the hierarchical character remains, and shows itself from time to time, especially when the market makers are not doing their job well, such as during periods of financial crisis or under the extreme stress of war finance.

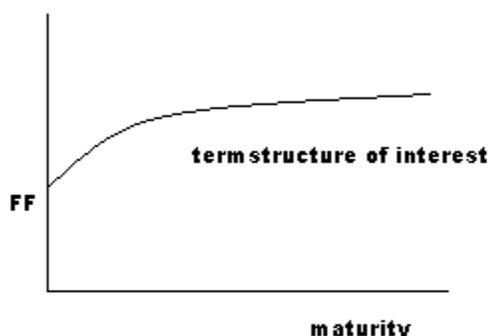
Even in less extreme times, fluctuation in the natural hierarchy shows up as strain on the market making institutions. A narrowing of the hierarchy means an increased qualitative differentiation between credit and money, and in the course of that differentiation there is bound to be pressure on the quantitative price of credit in terms of money. Just so, interest rates can and do change to reflect that stress, but that quantitative change is not necessarily equilibrating, and might just make the strain worse. Further, the whole point of par is that it is a price that does not change, and under a fixed exchange rate system the same is true internationally. The banking system thus comes under stress as the natural hierarchy fluctuates because it is bound to defend the fixed price between different layers of the hierarchy. Reserves are the first line of defense but, as we shall see, not at all the only line of defense.

V.

So far, I have been talking about market makers as a reactive bunch who respond to fluctuations in the natural hierarchy that are outside their control. I have also been implicitly assuming that their behavior is driven by the dictates of **profit maximization**. The whole idea of *monetary policy* however is to intervene actively with some objective in mind other than profit maximization. We can understand monetary policy as an attempt to manage the natural fluctuation of the system for the general good, rather than for the profit of the central bank.

So for example at a time when the natural hierarchy is flattening, instead of waiting for a financial crisis to reassert the scarcity of money, the monetary authorities might try themselves to reassert the scarcity by raising the Fed Funds rate (“taking away the punch bowl” in the immortal words of William McChesney Martin). Or, at a time when the natural hierarchy is very steep, the monetary authorities might try to reassert elasticity by lowering the Fed Funds rate (“pushing on a string” in the immortal words of John Maynard Keynes).

Note here that the main policy instrument of the central bank is the overnight borrowing rate. There can be considerable slippage between that rate and the longer term interest rates on which important investment and spending decisions depend. One of the purposes of this course will be get a better sense of the sources of that slippage.



I've said that the central bank intervenes for the general good. What does it mean, "the general good"? In this regard the ambitions of the monetary authority have shifted over time. The very first central banks focused their attention simply on "managing the hierarchy" to protect par and the exchange rate. If ordinary banks were having difficulty defending par, the central bank could help them out by providing additional reserves—this is the essence of the classic "lender of last resort" function. On the other hand, if the central bank itself was having difficulty defending the exchange rate, it could raise the interest rate in order to attract international reserves (gold). Clearly both of these interventions are natural objectives for a market maker that conceives of itself as safeguarding the monetary system.

Modern central banks have larger ambitions. They are typically concerned with "managing the economy." But their actions still have their impact only to the extent that they succeed in influencing the natural hierarchy. Modern central banks are perhaps not so much concerned with the shape of the hierarchy per se as they are with how that hierarchy articulates with the real economy, specifically aggregate demand and aggregate supply. That's fine, but it is vital not to lose sight of the underlying mechanisms of money and credit. As you might expect, the attempt to use monetary policy for non-monetary purposes can put strain on both par and the exchange rate, and more generally on the institutions charged with maintaining quantitative equivalence between qualitatively different levels of the hierarchy. Standard analytical frameworks in macroeconomics (such as IS-LM) tend to abstract from such strains, and hence from the limits of monetary policy. In this course, we will not be abstracting from such effects, but rather bringing them up to the center of our attention.