

17. Direct and Indirect Finance

Today we begin our fourth section of the course, which extends the money view to capital markets and asset prices.

It is common practice to treat capital markets in finance courses, and money markets in banking courses. But in the real world the two markets are quite completely integrated, most obviously in the shadow banking system, which I define as money market funding of capital market lending. Thus the intellectual habit to treat them separately is outdated, but also more than a little misleading and even dangerous. It is important however to appreciate that the tight integration of the two has historical and institutional roots.

In Bagehot's day, arguably, the two were much more separate than now. Banking, as we have seen, was about discounting of short term bills that financed goods on their way toward sale. Bank liquidity was assured by creating a portfolio of bills maturing at different times in the future, so that you always have cash inflow to meet possible cash outflow, either from deposit withdrawal or from new discounts. On the other hand, there was a capital market, for government and corporate bonds, and also equities.

In stylized form, Bagehot's world looked like this:

Bagehot's World

Primary borrower Business		Bank		Primary lender Household	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
	Bills	Bills	Deposits	Deposits	
	Bonds Equities			Bonds Equities	

We can see in the first line the money market, and in the second line the capital market. Households of course buy bonds and equities by transferring their bank deposits to business, which spends them on investments. But for the most part banks did not buy bonds or equities; they were thought to be inappropriate assets for banks because they were not "self-liquidating".

Economic historians argue whether British excellence in money markets held back the capital development of the nation by emphasizing short term finance at the expense of long term finance. I don't have a developed view on the matter. But I do observe that in the U.S., which was a developing country compared to Britain, the pressing need for long term finance caused the banking system regularly to hold long term bonds, and even some of the purported short term loans were really long term, since they were intended simply to roll over at maturity. As a consequence, banks did not have regular cash inflows to provide liquidity and they had to devise

another means. (They also did not have a central bank to provide rediscount, and so they had to devise other means for that as well.)

Instead of self-liquidating short term assets, they held substantial cash reserves, including correspondent balances, and devised elaborate mechanisms of secured interbank borrowing using their bond holdings as collateral.

The New World

Deficit bank		Surplus Bank	
Assets	Liabilities	Assets	Liabilities
Bonds	Deposits	Bonds	Deposits
Loans		Loans	
Cash		Cash	
Banker's balances			Banker's balances
-Cash Reserves		+Cash Reserves	
-Banker's balances			-Banker's balances
	+Interbank borrowing (repo)	+Interbank Borrowing (repo)	

By the way, this explains why the US was the first to have bond rating services. A bank in need of funds needed to sell some of its bond holding to another bank, or put it up as collateral (early repo), and no one had time or interest in investigating the fundamental value of the bond. So they relied on rating agencies to tell them, and the rating agencies focused on the question of whether there was likely to be a default in the next year. Default means that the coupon would not be paid, although possibly it was only delayed. You can see how the importance of the timing of cash flows enters the American system, but in a different way.

In the American system, liquidity was all about “shiftability”, meaning salability. The word was first used by Harold Moulton (JPE 1918), who was worrying that the new Fed discounting policy might interfere with capital accumulation. Shiftability means market liquidity, the ability to buy and sell. The net effect of this system was to mobilize bank deposits as a source of funding for long term capital finance, by using the repo market, not the real bills discount mechanism, as a source of liquidity. However the founders of the Fed saw this shiftability system as a source of instability and tried to replace it with proper real bills discount banking.

One way of understanding the banking collapse of the 1930s is that it was a run on the shadow banking system of the time, namely this system of private funding liquidity using repo on non-Treasury security. The Fed refused to support it, so it collapsed. The consequence was that the

government had to take on responsibility for long term lending itself through various mechanisms, most famously the Reconstruction Finance Corporation. This mistake was not, thankfully, repeated in 2007-8!

The larger lesson to draw is that, in the United States, securities markets and money markets have always been intertwined, going back even before the Fed. In previous lectures, I have told a story about monetary transmission, using central bank control over funding liquidity to affect market liquidity in securities markets, and hence asset prices. I think that is not recent, but in fact ancient (at least in the United States), although understanding how it works is not so ancient.

The Alchemy of Banking and Development Finance

One person who did understand the importance of banking for development finance was Schumpeter, whose experience was with the Continental banking system, not the British. As early as his PhD thesis he insisted on the importance of bank deposit creation as a mechanism for development finance, a way of giving purchasing power to entrepreneurs who do not have it, without requiring any individual saver to cough up saved funds.

Development Bank

Assets	Liabilities
+capital loan	+deposit

We've got to be careful here. It is very easy to go astray, and most of those you will find posing as monetary alchemists are in fact monetary cranks. The ability to create money from nothing is not the same as the ability to create bread from nothing. So important has it sometimes seemed to banish the unsound reasoning of monetary cranks, that economics has sometimes come close to adopting as a kind of Creed, "there aint no such thing as a free lunch". But there is.

Adam Smith, back in 1776, urged the adoption of a paper money system as a way of economizing on the use of gold. We could trade the gold for real capital assets, which is a trade of a sterile commodity for a productive resource. In a way that is what we have been doing ever since, moving toward a pure credit economy. I mention Adam Smith to establish the bona fides of the search for a monetary free lunch, but in fact the main source lies elsewhere than substituting inside money for outside money.

The key is the use of banking to mobilize unused resources. If entrepreneurs use their new deposits to buy things that otherwise would have been unsold, they don't raise prices, they increase economic activity. Schumpeter emphasized technological change. Others have

emphasized other margins of mobilization—see Lewis model on economic development and the role of banks in mobilizing underemployed labor, moving it from the traditional subsistence sector to modern manufacturing sector.

Payment versus Funding

The problem comes clearest if we think of the primary borrower as a corporation borrowing in order to purchase some physical capital asset such as a machine or a building. This involves the corporation in current expenditures far in excess of current receipts, and it is only over the long lifetime of the capital asset that the corporation expects to reverse that imbalance. Society's problem thus is to find someone to hold that illiquid asset over *its entire productive lifetime*.

More concretely, the issue is the distinction between **payment versus funding**. When we were adopting a banking point of view, we always emphasized the way that expansion of balance sheets by swapping IOUs creates elasticity in the payments system. Just so, a corporation can acquire means of payment simply by swapping its own IOU with that of a bank. And that, more or less, was where we stopped (except for wrinkles about whether the quantity of IOUs is limited by the quantity of reserves, or only the price). Now we go the next step, and think of the corporation as using that means of payment to acquire a physical asset from society. Then the question arises whether society as a whole is happy with the asset portfolio implied by the swap. Is society happy holding money rather than the physical asset?

Initial Payment Point of View (Money Mkt)

<u>Corp as Borrower</u>	<u>Bank</u>	<u>Society as Lender</u>
+100 deposit	+100 loan	
+100 bank loan	+100 deposit	
- 100 deposit		+100 deposit
+ machine		-machine

If the answer is yes, then we are done for the moment and the new capital is funded by an increase in outstanding money balances. But this is a tricky matter because money is a promise to pay on demand, while the capital asset cannot be turned into payment except over a long time. So there is significant mismatch between commitments and cash flows, which (as we have seen) can be a cause for crisis. So a safer form of finance will be when the financing matches better the characteristics of the asset being financed. This is the funding problem.

If society is not happy acquiring additional money balances, then the recipients will attempt to use those balances to buy a different financial asset. (Note that we are ruling out by assumption any attempt to spend the balances on goods. We assume that savings equals investment. The only imbalance at issue is a portfolio imbalance.) This will drive up the price of alternatives to money and so provide an incentive to issue such alternatives.

One way this all can work out is the following. Suppose that the bank loan was only bridge financing until the capital asset is up and running. Once its ability to produce revenue is proven, the corporation can pursue permanent financing in the form of bonds. The proceeds of that bond offering are then used to pay off the bank loan, and in effect society swaps the deposits it doesn't want to hold for a bond that it does want to hold.

“Permanent” Funding Point of View (Capital Mkt)

Corp as Borrower	Bank	Society as Lender	
-100 bank loan	-loan	-deposit	-100 deposit
+100 bond			+100 bond

Note that the bridge financing by deposit expansion is a kind of indirect finance, while the takeout financing by bond issue is a kind of direct finance. The Gurley and Shaw point of view emphasized the use of intermediaries as sources of indirect finance for the capital development of the nation.

What is an intermediary?

The word itself gives us a clue. It is a financial institution that mediates between the primary borrower and primary lender of funds, holding as assets the liabilities that the borrower issues, and issuing as its own liabilities the assets that the creditor holds. Standard banking texts (such as Mishkin) make a big point about the empirical importance of such **indirect finance** by contrast with **direct finance** in which borrower and lender meet directly, as by the direct issue and holding of stocks and bonds.

Primary Borrower Corporation		Intermediary		Primary Lender Household	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
	Direct Finance --stocks --bonds			Direct Finance --stocks --bonds	
	Indirect Finance --stocks --bonds --loans	Indirect --stocks --bonds --loans	Indirect --pension --insurance --money	Indirect Finance --pension --insurance --money	

Gurley and Shaw, in their classic Money in a Theory of Finance (1960), made a big point about the theoretical importance of such financial intermediation, along the following lines. They

argued that intermediaries help to facilitate economic growth by bridging any potential mismatch between the kind of liabilities that borrowers want to issue and the kind of assets that creditors want to hold. It is by changes in the quantity of indirect finance that capital markets equilibrate, and channel funds from savers to investors.

They overdid it. Modern finance, by contrast, emphasizes that no risk is eliminated in the process of intermediation, only transferred, and sometimes quite opaquely. Thus it is by changes in price that capital markets equilibrate. Attempts to avoid this by indirect finance only create arbitrage opportunities that over time have transformed the system.

Paradigmatic Intermediaries: Insurance and Pension

In idealized form, we can think of these intermediaries as holding the following balance sheets:

Insurance	Pension
bonds policies	stocks pension plan

For the more complete balance sheet, see www.federalreserve.gov/releases/z1/current/z1r-4.pdf. Tables L.116 and L.117 show insurance companies. Tables L.118 and L.119 show Pension Funds.

There can be no question that these are intermediaries, since their assets are clearly of different kind than their liabilities. Bonds pay regular coupons no matter what happens. Insurance policies pay only if some insurable event occurs. Stocks pay dividends and capital gains. Pension plans pay when owners retire, an amount depending on final wage, inflation, job tenure and the like (for defined benefit plans).

One of the trends in insurance is replacement of the traditional whole life insurance policy, which included a savings component, with term insurance. One of the trends in pensions is replacement of the traditional defined benefit plan with the defined contribution plan, such as a 401(k). Both trends reflect the rise of mutual funds as competitors to traditional indirect finance.

Here is a bond mutual fund, and a stock mutual fund.

Bond Mutual Fund	Stock mutual fund
bonds shares	stocks shares

(For details see tables L.122 and L.123)

At first glance, it appears that in a mutual fund there is intermediation, but that is mainly just pooling of risk through diversification, and not much transformation of risk. By construction, the

shares have exactly the same risk properties as the underlying pool of bonds or stocks. There is some benefit for the mutual fund shareholder from diversification, also management services. There is also some liquidity benefit perhaps, because open end funds typically promise to buy back shares at NAV. But that just means that mutual funds have to keep cash or lines of credit for the purpose, both of which will lower the return and hence are paid for by shareholders. Thus final glance confirms initial glance.

Basically bond funds have replaced the saving component of whole life insurance policies, and also bank time deposits, as fixed income saving instruments. And stock funds have replaced defined benefit plans as retirement income savings instruments. This change reduces the degree of transformation in financial intermediation. Nowadays, mismatch between the preferences of borrowers and the preferences of lenders is increasingly resolved by price changes rather than by traditional intermediation.

Banks as Intermediaries

So far in this course we have been emphasizing the special role of banks in the liquidity hierarchy on account of the fact that their liabilities (bank deposits) are means of payment. Thus banks are able to turn private debts into purchasing power by accepting them, in effect swapping IOUs.

As it happens, individual households and firms in the economy not only want to make payments (flow), they also want to hold means of payment (stock). This makes room for the banking system as a whole to issue a **permanent short position in cash**. The role of banks as intermediaries comes from their use of this short position to fund long positions in non-cash assets.

You might think that the liquidity of bank liabilities requires liquidity of their assets, but this is true only at the margin. To achieve liquidity on the margin, it is sufficient that the banking system hold some cash reserves, and have the ability to replenish those reserves. For this latter purpose, individual banks depend on access to the FF market and discount loans at the Fed, and on holding of some easily sold “secondary reserve” assets. (Here we see the distinction between liquid asset and liquid market again.)

The important point is that, after liquidity needs are taken care of, there will be some fraction of total deposits left over which can be invested in less liquid assets.

<u>Assets</u>	<u>Liabilities</u>
Cash reserves	Deposits
Secondary reserves	
Loans	Net Worth

Because bank deposits are substitutes for currency, and because currency typically pays no interest, deposits typically pay zero or low interest as well. This makes it profitable for banks to

make loans at relatively attractive rates. Not surprising, there is considerable competition to get access to this cheap money. Historically, the biggest player in this competition is the government. In times of war, we always see bank balance sheets fill up with loans to the government or to government-favored enterprises. Similarly, for countries trying to jumpstart a development process, it is very tempting to begin by trying to mobilize idle balances on the balance sheets of domestic banks.

In the United States, politics has resulted in a division of the spoils of this cheap source of funds during peacetime. Until recently, the central bank has invested almost entirely in government debt. Commercial banks historically specialize in making commercial and industrial loans, though they do other things as well. Savings and loans historically specialize in mortgage lending and they issue "shares" which have come to look more and more like deposits. You can find data at <http://www.federalreserve.gov/releases/z1/Current/z1r-4.pdf> , L.108 Monetary Authority, L.109 Commercial Banks, L.114 Savings Institutions, L.121 Money Market Mutual Funds.

Central Bank		Commercial Bank		Savings and Loan	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Treasury secs	High-powered money	C&I loans	deposits	Mortgage loans	Shares

Building on the discussion from last time, it should be clear that even if we grant that a certain portion of deposits are permanent, there are still considerable risks involved in using those deposits to fund C&I loans, and mortgages. Liquidity risk is one of them. But once we turn our attention to intermediation, **solvency risk** becomes the main focus. Main sources of solvency risk are interest rate risk and credit risk. Again the financial revolution has transformed banking, most dramatically in the transformation from Jimmy Stewart banks to shadow banking.

The Shadow Banking System as Intermediation

This development needs to be understood as part of the challenge of finance. From a finance point of view, an intermediary that offers liabilities with different risk characteristics than its assets must itself be bearing the risk of that transformation. But this means that its stockholders (or the government), presumably primary lenders, must be bearing that risk, so the transformation of risk is illusory. Risk is just getting moved around, not eliminated.

From the finance point of view, the illusion that risk is being eliminated comes from the fact that risk is not being (directly) priced. The answer is to strip out every risk exposure and price it separately. From the finance point of view, any mismatch between the kind of liabilities that borrowers want to issue and the kind of assets that creditors want to hold is equilibrated not by

changes in quantity but by changes in price. Creditors bid up the price of assets they like, and bid down the price of assets they don't like, until the price exactly compensates for the risk.

That is one way of understanding what shadow banking does. Thus, a modern course in banking has to understand the various swaps that are used to strip out the risk exposure and price it separately. That's what we will be doing in the next lectures.

From Bank-based Credit to Market-based Credit

Securitization		Shadow Bank		MMMF	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
RMBS	Hi tranche Mid tranche Lo tranche	Hi tranche IR Swap CD Swap Liquidity put	RP ABCP	RP ABCP Liquidity put	"deposits"

Traditional Bank	
Assets	Liabilities
Loans Reserves	Deposits Capital Liquidity put

FRB backstop → (points to Reserves in Traditional Bank table)

FDIC backstop → (points to Deposits in Traditional Bank table)