Chapter 1

The World of Money

As indicated in the preface, my intention in this book is to prepare readers to analyze and explain real-world financial conditions and transactions. I have taken great pains to keep this work squarely on the plane of reality, because I think that in economics and finance more attention needs to be paid to history and "politics", and somewhat less to mathematics and certain esoteric theoretical considerations.

Yes, algebra is important for the study of finance, and later in this book it is freely used; but first and foremost I like to regard finance as the physics of economics, and feel that it is one of the few areas in economics where it is possible to come into contact with, and often practice, the kind of genuine scientific thinking that we too often fail to encounter in much of the economics curriculum. As odd as it may sound, learning to handle scientific concepts does not necessarily mean being overexposed to advanced mathematics. For instance, Albert Einstein, Enrico Fermi, and Richard Feynman — Nobel Laureates in physics — made a point of using as little mathematics as possible, although they had plenty at their disposal.

Of course, when the humorist P.J. O'Rourke writes that "We don't need to know math to understand economics ..." then our immediate reaction should be to ponder the identity of the "we" to whom he is referring. Perhaps it is the famous Mr. O'Rourke himself, although this would undoubtedly come as a surprise to almost every serious student of economics between the ski slopes of Northern Sweden and the Capetown (South Africa) naval yard who perused Chapter 6 of that gentleman's book "Eat the Rich" (1998).

Before completing this prologue, I would like to assure all readers that they will know a great deal about the financial structure and logic of the world in which they live well before they finish the last chapter of this book. In fact, it could happen that they will have a considerable amount of knowledge about this subject by the time they complete the first (non-technical) part of the book, and if they do not feel like confronting the algebra in later chapters right away, they can read the first four chapters again, and also Chapter 9. As you will ultimately find out, becoming conversant with the materials in those five chapters, as well as a few topics from the other chapters, could turn out to be an excellent career move. See also Marc Levinson (1999).

I. Money and Interest

The purpose of this chapter is to provide an overview of some important topics in money and finance. It is also designed to give readers an introduction to the rather special vocabulary of financial markets. This aspect of the present book is extremely important, and possession of an extensive financial vocabulary is something that you will find enormously valuable in many professional and social situations. This is an important reason for studying the glossary. To begin, let us consider the four most important functions of money. Money is a means of exchange, a measure of value, and a store of value. Whether it is satisfactory in these functions — especially the last two — is a much debated question, but there do not seem to be any alternatives. Particularly annoying is money's performance as a store of value, since inflation has occasionally eroded the value of many national currencies to an alarming extent. Money is also a unit of account.

If we consider the position of the US dollar after the Second World War, then the dollar was the international unit of account because other governments used it to define their exchange rates; the means of exchange, because it was universally acceptable for the payment of international debt; and an international store of value, since foreign exchange reserves were mostly held in dollars. The term dollar is derived from the word "thaler", which is a monetary unit introduced in Joachimstal (Czechoslovakia) in 1518. The dollar became the official US currency unit in 1793, and was defined as being worth eight Spanish "reales", represented by the symbol

/8/. This symbol later became a "$". One year earlier, in 1792, the first securities were traded on Wall Street (New York).

That was the past, and now for the present. The dollar enters one side of 90% of the world's interbank foreign exchange transactions, and 90% of the international trade in commodities is priced in dollars. Moreover, as Steve Hanke (1999) surprisingly notes, 40% of Japan's manufactured exports, and 70% of its imports are invoiced in dollars, not yen.

During a large part of the post World War II period, inflation has turned out to be a tenacious economic dilemma for the governments of many countries. Inflation is particularly malignant for individuals with a fixed income (such as pensioners), but even employers in most countries — who tend to find rising prices a comfort much of the time — have come to regard inflation as a nemesis: when prices go up, their employees often insist on compensatory rises in pay, and occasionally they or their unions are strong enough to obtain them.

At the close of the 20th century, it became clear that inflation was extremely important for both bond and stock (or share) market values. (Note: bonds refer to corporate or government debt, while stocks — or equity — refer to ownership.) If the price of goods and services shows a tendency to rise, then purchasers of bonds might require higher interest rates in order to refrain from present consumption to the extent that they continue buying the same or an increased amount of these securities. And if interest rates rise then, *ceteris paribus* (i.e. all things remaining the same) shares lose some of their attraction. The reason is that the desirability of a financial asset depends on its yield (or return) and its risk. If bond yields increase (via a rise in interest rates), then — ceteris paribus — many investors might consider it prudent to substitute bonds with their (supposedly) guaranteed yields for some of the riskier shares in their *portfolios* (i.e. collection of assets). There have also been occasions when shares became slightly less attractive, and nervous investors rushed to the conclusion that there was considerable trouble ahead. If these and then other shareholders begin selling shares, and this behavior accelerates, then eventually we could be faced with the kind of stockmarket "meltdown" in which a huge amount of investor wealth is decimated.

A short digression on the concept of yield might be desirable before continuing. An asset's yield can be calculated from the receipts and costs resulting from its possession during a specific interval. If these receipts and costs can be valued in some monetary unit, then the *value* of the yield can be determined. (For example, if you buy a bond today for $100, and obtain $109 in a year, then the nominal (or monetary) yield is 9%. The cost (= principal) is $100, the interest income is $9, and at the end of the year the purchaser obtains the principal + interest.) But it is also possible to think of the yield in terms of satisfaction, or *utility*, as with a durable good (such as a washing machine, or TV set). The concept of utility is also useful in describing or comparing situations in which uncertainty is present. For many persons, a guaranteed return of 9% has a higher "utility yield" than a highly likely but still uncertain return of 10.5%.

Labor markets have been "tight" in the US during the late 1990s, and a great concern was that this would lead to higher wages and salaries, which in turn will be transformed into higher prices, with the next step being higher interest rates and the possibility of a traumatic stock market "correction". Of course, there are economists claiming that a new paradigm (i.e. pattern) now prevails in countries like Sweden and the US, with high productivity increases restraining inflation, and thus justifying the lower yields on stocks that, ceteris paribus, might result from having to pay more for these assets. (The capital gain on a share costing $50, whose price increases by $5, is 10%; while a $5 price increase on a $100 share yields only 5%. But once again, it has been contended that investors might be willing to accept modest yields if the inflation rate is low.)

In considering the foregoing argument, readers should be aware that we have touched on the difference between money income and real income. Money income is the compensation received by an employee in money, while real income is (in theory) the compensation in goods. Quite simply, if the price of goods and services rises faster than incomes, then real incomes decrease, and the amount of goods (and services) that can be purchased — even with a rising income — decreases. This is one of the reasons why, when consumers see that prices are rising, and/or they expect that prices will rise, they might demand higher interest rates on bonds, and higher yields on shares, before they are willing to postpone consumption.

By way of clarifying this matter, consider the following example. Suppose that you have a certain income, and your tastes are such that you only consume that wonderful Swedish delicacy, sill chutney. If the price of sill chutney is unity ($p = 1$), and the rate of interest is 10%, it means that if you save 100 dollars, then after a year you receive 110 dollars ($= 100\ (1 + r) = 100(1 + 0.10) = \$110$). If there is no increase in the price level, then with this money you can consume 110 units of sill chutney. The real interest rate, which is a commodity rate of interest, is 10% ($= (110 - 100)/100) \times 100\%$), which happens in this case to be the same as the money rate of interest. But suppose that with the same savings and interest rate, the price rises by 5%: from $p = 1$ to $p = 1.05$! Your 100 dollars still grows to 110 dollars under "the force of interest", but you can only consume $110/1.05 = 104.76$ units. The real rate of interest is therefore only $\{(104.76 - 100)/100\} \times 100\% = 4.76\% \approx 5\%$. More generally, if we call g the inflation rate, and r_m the money rate of interest, then the (approximate) real rate of interest (r_r) is $r_r = r_m - g$. If you are concerned with real as opposed to money (or nominal) rates of interest, and you hear on CNN that labor markets are "overheated", or the money supply increased by a large amount, then you might expect an increase in the rate of inflation, and thus a (ceteris paribus) decline in r_r.

It is virtually impossible to overestimate the value of being able to reason in both real and nominal terms. Debtors, for instance, are quite partial to allowing inflation to reduce the real value of their debts. Here I think immediately of student loans in Sweden. More relevant, governments with long-term nominal debt (e.g. governments that have much of their outstanding debt in long-term bonds) might be tempted, in theory, to inflate in order to erode the real value of their obligations. (Of course, the US has a huge national debt, but has shown no sign of encouraging inflation.)

If you read the financial pages of your local newspaper, or watch TV, then you know that the stock (or share) market often assumes that if there is inflation, then an increase in the (money) rate of interest (r_m) will follow; and as you will learn later, it might lead to a decrease in the demand for shares.

Inflation is the rate of increase in the price level. In the above, the price of sill chutney this year is unity, and 1.05 next year, and so the inflation rate is [(1.05 – 1.00)/1] × 100% = 0.05 × 100% = 5%. It sometimes helps to differentiate between *ex-ante* (before or expected) and *ex-post* (after or realized) entities. In the present exercise, in theory, it might be better to speak of the expected inflation rate, and write $r_r = r_m - E(g)$, where E is called the *expectations operator*, and thus E(g) is the expected inflation rate: bond buyers might demand higher interest rates because they *expect* inflation to increase, and without these higher rates their increase in purchasing power in the future due to saving is judged inadequate for the sacrifice of present consumption. Similarly, deflation is the rate of decline in the price level, which can also be considered ex-ante and ex-post. *Disinflation* is a slowing down in the rate of inflation.

Interestingly enough, the UK government's use of indexed debt in the 1980s helped reduce interest rates because it increased the credibility of the government's anti-inflation intentions, and as a bonus the fall in interest rates reduced borrowing costs. (Indexing a loan to inflation means e.g. that (interest) payments are tied to price increases. Similarly, pensions in many countries are tied to the inflation rate.)

A popular definition of inflation is "too much money chasing too few goods". In the last years of the 20th century, we have seen large increases in productivity that have raised the output of "goods". Technology has been important, along with changes in work habits and income distributions, although it is not easy to confirm the economic relationships at work here.

A symbol that you will need later is Δ (i.e. "delta"), which in words is interpreted as "the change in". In the calculation above of the inflation rate we could have written $g = [(p_{t+1} - p_t)/p_t] \times 100\%$ which in turn can be written $g = (\Delta p/p) \times 100\%$. Δp is then $(p_{t+1} - p_t)$, which means "the change in p". In the example $\Delta p = 1.05 - 1.00 = 0.05$, and $\Delta p/p$ is a *rate*!

Exercises

1. In Switzerland, accounts owned by foreigners sometimes carry a negative rate of interest. What does this mean for the real rate of interest? Can you figure out why the Swiss impose this arrangement?
2. Market "watchers" and financial analysts are interested in things like the money supply, and capacity utilization in industry. Explain why!

3. Redo the exercise immediately above in the text, only taking the price rise as 10%. In words, what does $\Delta X/X$ mean? $\Delta X/\Delta Y$?

II. The Markets for Money

The definition of the money supply is important. The narrowest money-supply measure is the monetary base, or M0. This consists of currency and bank reserves. Next comes another narrow money stock (called M1 in the US, or sometimes "transactions money") consisting basically of currency (which is about 25% of the narrow money stock in the US) and demand (or checking or current) deposits in financial institutions. Checks can be written against these demand deposits, but conventionally they pay little or no interest. However, in the US, it is possible to transfer checking account balances above a certain amount to interest bearing savings accounts via ATS (Automatic-Transfer Savings) accounts, and a transfer can take place in the other direction via NOW (Negotiable Order of Withdrawal) accounts. Accordingly, in the narrow money supply, demand deposits should be replaced by checkable deposits, which includes ATS and NOW accounts, and also the accounts supporting credit cards and travellers checks.

Electronic currency in the form of debit cards and stored value (or "smart cards") can in theory be issued for virtually any amount. The most sophisticated smart cards contain a computer chip, and they can be loaded with digital cash from its owner's bank account. As an aside, readers might like to know that coins are believed to have originated in Lydia, a Greek city-state (about 700 BC), while paper money is thought to have been introduced in China during the Ming dynasty (1368–1399 AD).

Why this emphasis on the "narrow" money supply (e.g. M1)? The answer is that when market watchers and financial analysts in the US were routinely obsessed by the weekly announcements of money supply statistics, they inevitably focussed on M1. The point was to outguess other players as to how the market reacts to changes in M1. Needless to say, an adverse reaction in the US can have serious consequences for many other countries.

There is also a broad money stock which comprises such things as savings and time deposits. This broad money stock operates on several levels, and is where we introduce expressions such as M2, M3, and so on. Something that needs to be mentioned here is that during the period when monetarism was taken seriously — where monetarism as a concept merely means a steady growth in the money supply, and (in theory) hands-off management by the authorities — one of the major problems was deciding "which" money supply was applicable for this steady-growth treatment, and/or which money supply analysts should be scrutinizing.

One of the difficulties here, according to Charles Goodhart — a former advisor to the Bank of England — is that when an economic indicator becomes an instrument of government policy, the behavior of this indicator shows a tendency to change from its pre-governmental policy status. This is called "Goodhart's Law", however what it amounts to is a very rough adaption of Heisenberg's "Uncertainty Principle" in physics. This principle has sometimes been interpreted to mean that the close observation of certain aspects of a phenomenon can lead to an inaccurate perception of other aspects of the same phenomenon. The well known trader Bruce Kovner feels that applied to financial markets it says that the closer a price pattern is observed by speculators, the greater the likelihood that false signals will be generated. (Literally, the Uncertainty Principle maintains the impossibility of satisfactorily measuring both position *and* velocity of an elementary particle: measuring the velocity perfectly means that the particle could be anywhere.)

Ordinary persons have a number of ways of saving money. They keep it in a cookie jar or mattress, put it in financial institutions (such as banks), buy financial assets such as bonds and shares, and so on. As a matter of definition, bonds originate in the debt market — since they are usually the debt of corporations or government; while shares (i.e. stocks) indicate ownership, and are called equities. Bonds are often called fixed income securities, since unless things go drastically wrong, the owner will always get a certain amount of money at regular intervals over the maturity of the bond, and/or the face value of the asset at the maturity or expiry date, unless the bonds are "callable". If not callable, then e.g. 30-year bonds "pay-off" after 30 years; but if callable the earliest date at which they can be called is clearly specified. Both bonds and shares are called securities, although a security is usually defined as a promise to pay a specific sum of money on a specific future date! A share does not usually make this promise.

Persons or institutions that are not so ordinary, such as multi-millionaires and pension funds, also occasionally use banks, and they definitely buy bonds and stocks, but in addition they have the option of purchasing certain money market assets that are specifically tailored for big-ticket savers. Among these assets are Treasury bills (T-bills), which are usually short-term (three to six months) government securities that tend to be denominated in amounts that are beyond the reach of small savers. These bills make just one future payment. Bills of longer maturity are designated zero-coupon bonds, and they too promise just one payment. Conventional bonds promise a series of payments, often every six months, and a payment of the principal (i.e. the face value of the bond) on the maturity date. Short maturity bonds — one year or less — are often called notes.

Certificates of deposit (CDs) are a favorite of institutional investors in the US. These are fixed term deposits that are issued by almost all the major commercial banks, and can be resold in a secondary market. (The market in which these assets are issued is called a primary market. The same thing holds for other financial assets that can be traded — i.e. bought and sold — after they are issued.) The money market includes the commercial paper market, which has become extremely important in the US. Commercial paper usually takes the form of an unsecured short-term (30–60 days) promissory note that is issued into the money market, where it is sold at a discount to its face value. Often it is associated with a back-up (bank) credit facility that can help with funding in case of a liquidity problem at the time the paper falls due.

There is also the market for bankers' acceptances (i.e. debts between companies), where banks "accept" bills of exchange, and lend to creditors (expecting to receive their money later from debtors); and the very important federal funds market in the US, and the inter-bank market in the UK, where banks with a surplus of reserves lend them to banks that do not have enough. Although it seems odd, huge sums of money are loaned overnight, and in the US, overnight federal funds represent the shortest-term security that is actually traded. The reserves mentioned here are liquid assets necessary to support bank lending. (An asset can be defined as anything that has economic value!) Interest rates on these and other financial assets are published daily in the *Wall Street Journal* in the "Money Rates" column.

In talking about bank reserves and the unexpected liquidity problems that are implied by the presence of large overnight loan markets, it is interesting to note the launching in Europe of US-style liquidity funds for institutions. The logic here is simple. There are hundreds of billions of dollars in "cash" — i.e. mostly short-term bank deposits — being held by e.g. pension funds and large corporations. (UK pension funds traditionally hold about 4% of their assets in cash.) If a part of these went into e.g. Merrill Lynch Mercury Funds, they could earn at the present time about 15 basis points (i.e. 0.15%) more than bank deposits. These liquidity funds channel their money into highly liquid assets (such as government bonds), and the clients of these liquidity funds can obtain cash in currency or deposit form almost as easily as they can withdraw money from an ATM.

Access to the money markets has increased for small savers due to such innovations as money market mutual funds, that combine the resources of small savers into amounts that are large enough to purchase the most expensive shares, bonds, and other assets. The purchase of such items is an integral part of the process known as disintermediation, in which banks can be bypassed, and financial assets obtained directly from their issuers. Similarly, borrowers can obtain money by issuing bonds rather than by borrowing from banks. Of course, it often happens that it is less expensive for large corporations to borrow from (a syndicate of) banks than to issue bonds.

In the US at the beginning of the 21st century, commercial banks' share of total financial assets has fallen to one-fifth from about half in 1950, while half of all households own shares directly, or through mutual funds. Internet brokers now give their customers access to several hundred mutual funds which do not require entrance or exit costs. This "depot-trade" is often financed by the funds themselves because it relieves them of a part of their administrative work. They merely levy a small fee on the amounts being managed.

A well known fund of this type in the US is Charles Schwab's highly successful "One Source", where customers are offered a choice of several hundred no-commission mutual funds that are without transaction or redemption fees. Instead there is a moderate flat fee that is tied to the value of the assets under management. This is a typical no-load fund, as compared to funds where a fee or commission must be paid in order to become a member. Professor Burton Malkiel once remarked that on the average the performance of these two types of funds were about the same, and as a result he always shopped in the no-load market. Why buy something that you can get free, he asked, although even among the very sophisticated denizens of high finance it is quite normal to encounter or to hear about persons who insist on paying for a free lunch.

Two other fund categories can be mentioned here — open end and closed end funds. In the first shares can be redeemed at any time, at a price that is tied to the asset value of the fund. The shares of the fund represent a proportionate ownership in a portfolio of assets held by the mutual fund. At any time a shareholder can buy additional shares from the fund, or cash in (i.e. redeem) shares in the fund at their net asset value. In the closed end arrangement, shares are neither issued nor redeemed after the initial offering. The buying and selling of these shares takes place in the stock market from a fixed amount of equities at prices determined by supply and demand. Closed end funds are in the minority.

Globally, there were thousands of mutual and other types of funds in existence as the world entered the 21st century, many of them highly specialized to regions and/or concepts, such as East Asia, Latin America, Eastern Europe, emerging markets, etc. Included in this roster of mutual funds are index funds which, since they match market averages, literally allow investors to buy a "market": for instance, it is possible to "buy" the Dow Jones index, which is a collection of 30 industrial shares that supposedly measures the performance of the entire US share market; or the Standard and Poor's (S&P) 500, or whatever. In the US, 20 cents of every retail dollar going into mutual funds goes into index funds, where "retail" means that institutional savers (such as pension-funds) are excluded. (In the UK, however, by 1999 about 10% of pension-funds' money was invested in index funds, as compared to 4% in 1993.) This type of investment, which is sometimes called a "no brainer", routinely yields higher returns than those registered by all except a handful of superstar investors — mostly high-profile finance professionals. In fact I have never heard of a time — in either the US or the UK — when, on the average, index funds did not achieve palpably superior returns to a very large majority of managed funds. This does not mean, however, that fund managers and brokers are an endangered species, since their highly specialized knowledge and experience is often worth a great deal to prospective investors.

As compared to money markets, bonds and shares are issued in capital markets. Most persons are familiar with stock markets, but they seem unaware that bond markets can be much larger. During the last year of the 20th century a few starry-eyed stock-market watchers have been claiming that in the next century, stock market valuations will explode upwards, and as a result virtually no price is too silly to pay for an equity that has something to do with the Internet or mobile telephony. Consequently, bonds and bond funds should be imbibed in the smallest possible doses.

According to Jeremy Siegal, author of the influential book "Stocks for the Long Run", if your ancestors in the US had invested a dollar in gold and a dollar in stocks in 1802, then in 1997 the gold "play" would have been worth $0.84, and the stocks $558,945. All this is very well, but one of the things I hope that you learn from this book is to be careful where analytical evidence covering centuries is concerned. If you had bought $100 worth of stocks at random on 1 January 1920, with the intention of holding them for a decade, then when you sold them on 1 January 1930, you might been able to buy enough apples to join the hundreds of destitute war veterans selling that delightful fruit on street corners in New York city. On the other hand, if you bought a hundred dollars worth of gold on 1 January 1970, then if you sold it a decade later, it would have financed a pleasant week of skiing at Sun Valley (Idaho), or a long stay at Miami Beach. As they say on The Street: "No, Virginia. Now is not the time to turn your back on the bond market!"

In the US, the derivatives (futures and options) markets for bonds is huge. London is much more important for the trading of such things as Eurobonds than for its excellent stock market facilities, even taking into consideration the modernization and computerization of the London stock exchange in 1986 in an operation that was termed the "Big Bang". (The Big Bang was immediately preceded by the Financial Services Act, which was mostly concerned with curtailing the regulation of financial markets.) Interestingly enough, London is not generally considered to be a really dominant center for such things as the issuing and trading of corporate bonds, even though London (and not Tokyo or Frankfurt) is the second most important global financial center (after New York), and will probably be the financial capital of the European Union (EU). Frankfurt has recently developed high hopes of overtaking London in the not too distant future, especially after its Eurex Exchange surpassed the London International Financial Futures and Options Exchange (LIFFE) in trading the 10-year (German) Bund Futures Contract, which in financial prestige is at least the equivalent of a futures on the US 10-year T-bond (i.e. Treasury bond). "At least" because the underlying fixed income security, the Bund, though issued by the German government, is the benchmark (i.e. reference or standard) bond for the 11-nation Euro-zone bloc.

Regrettably, one swan does not make a summer, and although LIFFE considered the Bund to be its pride and joy, London's stock market has twice the market capitalization of Frankfurt's. Three times the number of overseas banks are associated with the London market, along with a few battalions of highly successful risk takers and top traders, and it has a long and successful risk taking tradition. In addition, Frankfurt does not have a good reputation where that elusive quality known as "openness" is concerned: it was not until 1995 that insider trading was formally outlawed.

When a firm has a high ratio of debt to equity (i.e. ownership), it is called highly leveraged in the US, and highly geared in the UK. 1987 and 1988 were years in which leveraged buyouts (LBOs), often financed by junk bonds reached a new peak. What we usually have here are arrangements in which various investors buy junk bonds — which are more formally known as "below investment grade" or "high risk" securities — and thus become lenders to the buyers of a firm. If lucky, the new owners (who are sometimes called "raiders", if the projected takeover is "hostile"), obtain uninhibited access to the firm's cash flow. The problem is that equity in the taken-over company is literally swamped by new debt, which in theory will be repaid out of higher profits obtained via more efficient management and higher productivity, and/or, in the best of all possible worlds, an upswing in the business cycle.

Needless to say, the business cycle often turned in the other direction, which caused a serious problem for many employees of the taken over firms — though not those who had come on board wearing golden parachutes; and in a number of cases the additional debt had to be serviced by the sale of physical assets, and contracting for even more debt.

There has been a fairly high default rate on junk bonds, and a brief period in 1990 when the US Congress apparently forced at least some financial institutions to dump their junk portfolios. The junk bond market in the US crashed in the mid-nineties, however it appears to be gathering momentum once again. As will be noted later, Europe is developing an attachment to junk bonds. A main factor here is that junk *spreads* — i.e. yields in excess of those available on top-grade securities of the same maturity — are higher than at any time since 1985. Firms that are threatened by takeovers are also prone to float junk bonds in order to secure the financial capital that will enable them to buy a controlling share of the outstanding equities of these endangered firms. (Financial capital is stocks, bonds, etc used to finance the acquisition of physical capital!)

The term often used to describe this defensive ploy is "greenmail". Another self-defense mechanism is the "poison pill". What happens here is that the threatened firm gives all shareholders except the "raider" the right to buy new shares at a large discount. This makes purchasing enough shares to complete the takeover too expensive. Another nice term is "White Knight". This is a (possible) rival bidder who is preferable to the original predator.

There has been a great deal of discussion about the takeover mania of the 1980s, and one theory is that if it were justified — and this is a big if — the justification must turn on boosting the price of the stock of the target companies to a level that is closer to the fundamental value of the underlying assets. As Tobin and Golub (1998) point out, ordinary investors may have detected the same undervaluations, but could not take advantage of them until many more ordinary investors agreed (and presumably began to purchase these stocks), or a takeover materialized.

III. Banks, Bankers' Banks, and the Euromarket

Banking is an art, or science, that reportedly had its roots in ancient Egypt or Assyria, although modern fractional reserve commercial banking seems to have had its origins in Italy in the 15th century. But there are other types of banks. Investment banks, for instance, specialize in raising money for businesses via bond and stock issues, giving advice, and like the larger commercial banks they are active traders in various financial markets. Investment banking can be a very good business, although stunning miscalculations occasionally take place: in 1998 Credit Suisse First Boston lost an entire annual profit (more than a billion dollars) on some bad investments in Russia, and they were not alone. The fixed income division of Goldman Sachs also lost a billion dollars in the same country that year, and a year later lost something approaching 100 million on a bet involving the spread between government bond yields and the yield on another financial asset: this spread widened instead of narrowing, as predicted by Goldman Sachs experts. (However, as far as I can tell, Goldman Sachs is rated the top investment bank in the world at the beginning of the 21st century.)

Many investment banks function as underwriters. They guarantee the corporate or government borrower a price for their securities, and then sell them to the public at whatever price they will bring. This takes both capital and nerve. Japanese investment banks were originally called securities houses, because of the importance placed on underwriting.

Asset management — which involves "looking after other peoples' money" — is another major activity of investment banks. It is considered less glamorous than the multibillion-dollar merger and acquisition (M&A) deals that you can hardly avoid reading about these days, but the fee-based income that it generates is less volatile than the profits realized from the heavy trading of financial assets. For instance, in 1997 Morgan Stanley's net income from asset management was reportedly $400 million, although Switzerland's UBS — with well over $1 trillion under management — still leads the world in this field. The "other people" mentioned here include high-net-worth individuals, corporations, and many pension funds.

Another type of bank is the merchant bank, which was orginally a British phenomenon. In some respects they resemble investment banks, but they tend to be much smaller, and occasionally they take deposits — but mainly from important customers. They are, however, very fond of giving expensive advice to rich clients; acting as intermediaries in complicated business deals; trading large amounts of currencies, and in the 1980s became heavily involved in the leveraged buyout game. Something that should be appreciated here is that in the US, the Glass-Steagall Act of 1933 separated investment banking from commercial banking, but this act recently became history. There are some observers who claim that repealing the Glass-Stegall Act will pose considerable financial dangers to the entire US economy, because it will mean a huge displacement of liquidity from the commercial banking system to the investment banking community. This might also be the place to mention such institutions as "private banks", whose principal activity is managing the portfolios of wealthy clients (i.e. making investments for these clients), and the French banques d'affaires. The latter are similar to merchant banks, but often use their own money to build up a portfolio of shares.

The student of finance should be aware that in the United States, "merchant banking" is the designation of an activity within investment banks, and in this context explicitly means investing the firm's own money in things like mergers and leveraged buyouts. Once it was said to be Wall Street's "hottest" profit center, although it is ridiculed by some observers, who say that when a high level of risk is present, it is always best to use the money of outsiders. These same observers, however, do not ridicule proprietary trading. This is when the bank uses its own money to trade currencies, futures, options, etc. For example, at Salomon Brothers — one of the largest investment banks — bond arbitrage was the leading money maker, although at least one merchant bank — Barings (of London) — unfortunately collapsed due to the misfortunes of one of its ace foreign exchange and derivatives traders. Goldman Sachs is constantly boasting of its M&A and its asset management skills, however about 40% of its revenues originates in its trading rooms.

A very different type of institution is the central bank. Every country has one of these, and the Swedish central bank (the Riksbank) is the oldest (1668). The British central bank (the Bank of England) is second in longevity, dating from 1694. Central banks manage the money supply, and often they help ensure that governments have the finance they need: both the Swedish and UK central banks seem to have been established to help their governments fund various military adventures. In the United States, the chairman of the central bank (The Federal Reserve System) has occasionally been called the second most powerful man in the country. Managing the money supply, and setting interest rate policy are traditionally the most important functions of central banks; and the recent hue and cry about making central banks independent of governments is intended to remove these institutions from the control of governments and politicians, and thus prevent them from being too aggressive in the expansion of the money supply when the economy is weak and unemployment is high.

When government spending exceeds tax reviews, the difference is covered by borrowing. Government bonds are then sold to private individuals or institutions, both domestically and abroad. Japan, for example, has bought huge amounts of US debt. There was a time, however, when central banks bought a great many government securities, paying for them with newly printed money, and thus increasing the money supply. This is known as "monetizing the deficit" or, less politely, "printing money".

The newly formed European Central Bank, for instance, is a highly independent institution that places the fight against inflation first on its agenda. Many people in the Scandinavian countries are not enthusiastic about a brand of economic policy whose main concern is not the suppression of unemployment; but as they will almost certainly find out some sweet day, once you sign on with this particular bank, it will not be easy to sign off. In addition, something that seems to have been forgotten is that perhaps the worst inflation in modern times took place in Germany (in 1922–1923) when the central bank of that country was completely independent of all external supervision.

The Euromarket is based on cross border banking, and features such things as the depositing of dollars in various European banks, and the lending by these banks of dollars in the Eurocurrency market (which features "short-term" debt); or, e.g. the issuing of dollar denominated Eurobonds in e.g. London. This is "long-term" debt, where long-term usually indicates a maturity of over one year. To be precise, Eurocurrency markets are defined as banking markets located outside the legal jurisdiction of the authorities who have issued the relevant currencies: e.g. Euromarks are deutschemarks (DM) held in e.g. Rome or Paris.

Some investigators say that the beginnings of the Euromarket can be traced to the Cold War, when the Russians and Chinese ostensibly deposited dollars in West European financial institutions for trade purposes. At the same time that regulations on interest rates in the US (e.g. Regulation "Q") discouraged dollars that were earned abroad from returning to the United States, British banks were put in a position where it became highly profitable to lend dollars: in the UK the government placed severe restrictions on the lending of pounds, but financial institutions were left to their own devices where the lending of dollars was concerned.

Between 1965 and 1995 the rate of growth of the Eurodollar market was 22% (gross). Pilbeam (1998) gives as the main reason for the success of the Euromarkets their comparative advantage due to a minimum of regulation (as compared to banking practices in the US or Japan). Thus they could pay a higher rate for deposits, while charging a lower rate for loans. The difference between these two rates is called the *spread*, which is also the name for the difference between the bid (or buying) and ask (or offer) price of a financial asset. At your local bank you can always view the spread for various currencies, and occasionally they are very large. (Ask, or offer, is the selling price.)

The Eurobond market specializes in syndicated loans where many banks form a syndicate for the purpose of raising a large sum of money for a single borrower. Syndicated loans are still about 50% of the long-term capital raised on international markets, where international markets means capital raised across international borders: e.g. bonds issued in Stockholm and sold internationally. In 1998, financial institutions collected at least $6 billion in fees for arranging syndicated loans. Behind this figure is a new wave of corporate consolidation and reorganization.

Traditionally, one of the banks will be the lead manager for the syndicate. The first of these Eurobond operations involved the well known London merchant bank S.G. Warburg "leading" a 15-million-dollar issue, with Banque de Bruxelles SA, Deutsche Bank AG, and Rotterdamsche Bank NV as co-managers. (If you are curious about the composition of syndicates, then you can examine a "tombstone announcement" in e.g. *The Wall Street Journal*. These announcements have to do with completed deals.) There were 60,000 bonds with a face value of $250 each, and carrying a fixed coupon of 5.5%. As it happened, this issue — whose emission date was July 15, 1963 — was subjected to the interest equalization tax of 15% imposed by President Kennedy the same year on the purchase price of foreign bonds. This tax was designed to make bonds issued in Europe less attractive to US investors, and therefore relieve pressure on the US balance of payments (and the value of the dollar) caused by what the Kennedy government regarded as excessive capital outflow.

At the present time many Eurobonds are priced in terms of LIBOR — the London Interbank Offer Rate — which is the (loan) interest rate quoted each other by the best London banks. (There is also something called LIBID — the London Interbank Bid Rate — which is the rate bid to attract a deposit.) Eurobond loans can be fixed rate or floating rate, where floating rate usually means that the interest rate paid by the borrower is adjusted every three or six months with reference to some index. In discussing bonds, the expression maturity often comes up. The maturity is the "running time" of the bond, and the maturity date is the date when the holder of the bond should receive the principal or face value of the bond. Please remember too that there is a huge secondary market for bonds, and during the last ten years there were periods when higher profits could be realized by trading bonds than by speculating in stocks. (Tom Wolfe's "master of the universe" in his virtuoso novel "Bonfire of the Vanities" was a Wall Street bond trader.) How were these profits realized? Quite simply by having the acumen to know when certain bonds are underpriced, buying them, and waiting for the good news to appear in the form of a decline in interest rates: a fall in interest rates is tantamount to a rise in bond prices.

It is useful to distinguish between so-called "foreign bonds" and Eurobonds. An example of foreign bonds would be German bonds issued in the US, and denominated in US dollars: like other foreign bonds issued in the US, they are called "Yankee bonds". Another example is Swiss bonds issued in Japan, and denominated in yen. (These bonds are designated

"Samurai bonds".) On the other hand, Eurobonds are bonds denominated in a currency that is different from the currency of the country where they are sold — such as dollar denominated Eurobonds in London. Finally, Dragon Bonds are listed and promoted in Asia, while *Eurocurrencies* are foreign currencies deposited in banks outside the home country (of the currency).

An important feature of Eurobonds is that for the most part they are bearer bonds, which means that unlike e.g. Yankee bonds, they are unregistered, and mere possession amounts to ownership. They are therefore very attractive to bond thieves (as in the Donald Westlake novel "Cops and Robbers"), and persons with a strong preference for anonymity, such as tax avoiders. (On this point it should be noted that Eurobonds are not subject to a withholding tax. The market is "telephone intensive", with London being the hub. Investors simply give brokers details of the bonds they desire to purchase.) Two famous bond offerings took place in 1984, with Sweden making a 500-million-US-dollar floating rate placement in the Eurobond market. These bonds had a 40-year maturity, which at that time was the longest in Eurobond history, and carried a semiannual interest rate of LIBOR + 0.125%. On the emission date of the bonds, LIBOR was 10.4375%, and thus over the first six months after their issue the bonds yielded approximately (10.4375 + 0.1250)/2 = 5.2812%. In the second six months, their yield was increased or decreased if LIBOR changed.

Similarly, in 1984, the World Bank emitted US$250 million of ten-year floating rate notes on which the interest rate was 35 basis points (= 0.35%, since one basis point is equal to 1/100 = 0.01%) above the money-market yield on prespecified US 91-day treasury bills. Interest, in this case, was paid on a quarterly basis.

IV. A Simple Case Study

One of the most brilliant essays of L.J. Davis (1983), winner of the 1982 Gerald Loeb award for distinguished business and financial journalism, is called "The Road to West Jockstrap", and concerns the decline and fall of the Penn Central Railroad. All this took place at the end of the 1960s, and the story of that misadventure has been repeated many times since in other commercial and government undertakings. One of the things that we find in most of these melodramas is the irresponsible optimism of many directors, CEOs (chief executive officers), chairmen and chairwomen of the board, and other persons and personalities with an almost psycotic belief in their ability to strike bargains with fate.

What happened with Penn Central was the arrival on the scene of a new CEO with a plan to make railroad history by combining the tracks, terminals, etc. of the two largest railroads in the American Northeast — the Pennsylvania, and the New York Central — which would then be designated the Penn Central. The theory was that if things went well, it could be operated at a level of profitability well above that prevailing in the not very profitable railroad business. Needless to say, financing investments of the type alluded to above required obtaining access to huge amounts of money.

According to Davis, there was an extremely heavy reliance on bank loans, the sale of a great many bonds, a major resort to commercial paper, and perhaps the first large scale tapping of the Euromarket by an American firm. Something else of importance was the ambition of the chairman of the board of Penn Central to make this railroad a part of a conglomerate. Briefly put, a conglomerate involves bringing under single ownership all types of companies. The *modus operandi* is to buy anything that is profitable. The two great conglomateers of the 1960s were Charles Bludorn — Viennese born, but fluent in American profanity; and James Ling of Texas. Both came crashing down when the banks started calling in their loans, which was also the eventual fate of Penn Central. Another interesting example was the brilliant Palestinian refugee Yusef Beidas, with properties in New York, London, and Paris under management. His mistake was to put too much short-term money into property that was not liquid, and because his personal chemistry was not always congenial, the Lebanese Central Bank and some of Beirut's financial community apparently conspired in his downfall.

One of the reasons that Penn Central chose to rely so heavily on bank loans was that some of the officers of that firm were able to convince the directors of many large banks that they were becoming involved in a very profitable project. The same story was true of many of the property loans of the 1980s and early 1990s, when many top bankers seemed to have completely lost their sense of perspective.

In 1968, Penn Central received permission from the US government's financial regulators to sell 100 million dollars of commercial paper, and later was able to increase this amount to 200 million. The broker for this frivolous undertaking was Goldman Sachs, one of the great New York investment houses; however, in the end, the cachet of their distinguished intermediary did not amount to the proverbial hill of beans, since most purchasers of this paper ended up receiving 20 cents on the dollar.

Now for the Euromarket. In the late 1960s, the Euromarket was just getting up steam, and European banks were filled with dollars looking for borrowers. Furthermore, the directors of many of these banks were not particularly skilled in handling greenbacks, and so they were often prepared to lend to any organization with a recognizable name, whose CEO had a pleasing personality. In the transaction being discussed here, Penn Central had the distinction of employing a lawyer who, somewhat later, allegedly attempted to defraud the United States Navy; but it is also possible that Penn Central was too early out where the Euromarket was concerned. Had they been on the borrowing side of this market after it started receiving large injections of OPEC cash (i.e. petrodollars), they could have borrowed any amount they wanted, and forgotten about such things as commercial paper.

Why did the bandwagon come to a screeching halt? If we exclude bad management, and bad luck in the form of a regulatory structure that was guaranteed to make the railroad business a lost cause, the answer might be that Penn Central was burdened with too much short-term debt. Davis apparently believed that short-term debt can be converted to long-term debt by simply "rolling it over" — i.e. paying off the outstanding indebtedness with new loans; but clearly new lenders with the required amount of naiveté become progressively more difficult to find.

When Penn Central's severe financial defects were fully digested by interested parties, the institutional insiders (e.g. mutual funds) unloaded well over a million shares of Penn Central equity, with the last increment being divested just a day before the firm officially confirmed the rumors that it was bankrupt. In July 1968, Penn Central stock had sold for 85.5 dollars/ share, and by the time bankruptcy was declared — which was June 20, 1970 — this price had touched 11 dollars. Apparently, some of the directors of the firm, while loudly proclaiming the soundness of their organization, began getting rid of their shares as soon as they first got wind of how things might turn out. Many of the smaller stockholders received nothing, because in their capacity as "owners" of the firm, they could only legally lay claim to what is left after all debts are paid. As they soon found out, Penn Central's creditors (e.g. bondholders) took just about everything.

It is also astounding to realize that many of the small equity owners, as well as some of the large, sincerely believed to the last minute that the US government would not permit one of the most important transportation networks in the US to fail. As things turned out, they believed incorrectly,

Davis states that the Penn Central collapse triggered a three-billion-dollar selloff of commercial paper. Exactly what he meant is difficult to say, but a possibility is that when more than 80 million dollars of Penn Central paper went bad, it soured the market on all assets of this description, and where this kind of paper could be traded in a secondary market, it was immediately unloaded for whatever it would bring, which wasn't much. Here we have a situation that will become familiar to readers: markets suddenly becoming illiquid, which in this case meant a pronounced absence of buyers! What happened next was that the Federal Reserve — the US's central bank — declared itself the "lender of last resort", and made it clear to the (several thousand) members of the Federal Reserve System that the Fed's "discount window" would be open indefinitely. ("Discounting" — or "rediscounting" as it is often called — means the lending by the central bank to commercial banks, and usually at a relatively low rate of interest.) In addition, the famous — or infamous — Regulation Q, which limited the interest rates on deposits in domestic US banks was relaxed, which attracted more money into the banking system.

Finally, let me mention that an economist who has become a kind of saint in some quarters, Frederich Hayek, would have declared the above cited behavior by the Federal Reserve to be irresponsible and economically unjustifiable. As it happens, however, if the authorities had remained passive, there could have been a nation-wide financial panic. The same applies to the near collapse of the "hedge" fund Long Term Capital Management (LTCM) in the late 1990s. That firm, whose own capital was five billion dollars, had borrowed approximately 125 billion from institutions like Chase Manhattan. Had nature been permitted to take its course, the macroeconomic consequences could have been calamitous.

V. Financial Market Structure, and Final Remarks

The London stock exchange traces its origins to a coffeehouse club of brokers in the 1760s, although the oldest stock exchange is probably Hamburg (Germany), which dates from 1538. A common name for the stock exchange in France and Northern Europe is "bourse". This expression goes back to a commodity exchange in Bruges, Belgium, founded in 1360 in front of the home of the Chevalier van de Buerse.

In speaking of stock exchanges (or bourses), we think of a certain way to do business — a way that is quite different from selling pizzas at the nearest one-stop pasta emporium. Leon Walras, who could probably be called the grandfather of mathematical economics, observed more than a hundred years ago that "The more perfect competition functions, the more rigorous is the manner of arriving at value in exchange. The markets that are best organized from the competitive standpoint are those in which purchases and sales are made by auction, through the instrumentality of stockholders, commercial brokers, or criers acting as agents who centralize transactions in such a way that the terms of every exchange are openly announced, and an opportunity is given to sellers to lower their prices, and to buyers to raise their prices".

If we take a careful look at modern exchanges, we see what Maureen O'Hara (1995) calls four "categories" of players. We can start with order submitting customers; then brokers who transmit orders, and almost in the same category dealers, who often trade for themselves, but who might also handle the orders of customers. These are sometimes designated broker-dealers. Finally, there are the specialists or market makers, who usually post prices for one or more assets that they are prepared to buy or sell.

The US Commodity Exchange Act of 1974 defines a market as meeting the public interest if it satisfies three requirements: reliable price discovery, broad-based price dissemination, and effective hedging against price risk. In my own work on energy, I have taken a particular interest in the last of these, and come to the conclusion that often it is incompatible with the first: the use of exchange traded derivatives (or derivative products, as they are sometimes called) will often — but definitely not always — provide effective hedging; while the derivative product that is sometimes the most suitable for hedging purposes, swaps, does not provide a high degree of price discovery (because swap rates are usually not made public).

Of late, there has been a tendency to play down price discovery in the name of transparency. Ostensibly, in a world where information is generated faster than the managers of many exchanges thought was possible, such things as trading by open outcry are viewed by the new generation of screen warriors and their gurus as reactionary nonsense. They are not concerned with how prices are formed, but with their visibility. The ultimate goal is fully electronic exchanges and, worldwide, only a few of these.

Some simple exercises follow. Please remember that the purpose of these is not to trip you up, but to increase your self-confidence. I can recall a member of my platoon telling me that when he left the army, he was going to return to school. As he put it, "the more I know, the better I feel". Testing your knowledge with simple exercises that you learn to answer without hesitation will eventually help you to feel better than you have ever felt.

Exercises

1. Make sure that you know the meaning of the terms merchant bank, merchant banking, proprietary trading, capital market, fixed-income securities, "big bang", real rate of interest, secondary market, disintermediation, money market, disinflation!

2. Distinguish between real and money wages; and real and money incomes! Construct a numerical example involving 15% inflation, and if you can, put this illustration in algebraic (i.e. symbolic) form!
3. In the basic course in economics, many students come to the conclusion that central banks can stop inflation any time they please by simply raising the rate of interest. At times this might be true, but there might be costs involved. Discuss this issue!
4. In the light of the discussion in this chapter, why might foreign investors be worried if the inflation rate in the US began to escalate?
5. Suppose that on Jan 1, 2002, you look in the paper and see that your government has just issued a batch of 30-year bonds with a 10% rate of interest, and with a face value of $1,000. They will also guarantee that the central bank will completely suppress inflation. If you buy a $1,000 bond on that date, then you will obtain $100 on Jan 1 of the next 30 years, and your $1000 at the end of 30 years (along with the final payment of interest). This seems like an attractive proposition, and so you buy a bond. At the beginning of the following week, you look in the paper and see that the interest rate on a new issue of 30-year government bonds is 20%, but you suddenly find that you have financial problems, and instead of buying another bond, must sell the one you have in the secondary market. Are you in trouble? (Hint: the person to whom you sell the bond will continue to obtain the bond yield (or return) of $100/year.) Ignore the fact that the bond is now a week old, and the purchaser is one week closer to collecting his or her first $100!

VI. Appendix*

All discussions marked with an asterisk (*) can be skipped if the reader desires. Of course, as you may remember, the only technical materials in this chapter concerned the real rate of interest, and the algebra involved was the kind that you were introduced to in a late course in primary school, or an early course in secondary school. The same is true here. To be exact, we saw that the real rate of interest (r_r) could be written $r_r = r_m - E(g)$, where r_m is the money (or nominal) rate of interest, and E(g) is the expected rate of inflation.

Suppose that we have two countries, Japan and the US. For Japan, this expression would be $r_{rj} = r_{mj} - E(g_j)$, and for the US, we have $r_{r,us} = r_{m,us} - E(g_{us})$. Now, in case a couple of charming and well spoken young people appear at your door to interview you for a 150,000 dollar/ year in the financial district of Chicago, and the question of interest rates pops up, you can begin your presentation by saying that a number of theorists like to claim that while money interest rates are different between countries, real interest rates "tend" to even out. Thus, we would have from this hypothesis $r_{mj} - E(g_j) = r_{m,us} - E(g_{us})$, which can be solved to give $r_{m,us} - r_{mj} = E(g_{us}) - E(g_j)$. Accordingly, you would conclude your presentation by suggesting that on the average, differences in nominal interest rates — which are often considered the principal cause of capital (i.e. money) flows between countries — might be caused by differences in inflationary expectations. Whether the interviewers buy this or not, and whether you get your job, remains to be seen, but you can thank them warmly for joining you in your humble abode on the South Side, and after they leave, return to the study of this book. As an aside, you might point out that exchange rates are also influenced by inflation and/or inflationary expectations.

"On the average"? Your visitors turn at the door, and in a not so polite tone of voice ask you what a concept like "average" is doing in an interview where precision is supposed to be the keystone. The correct answer on this occasion is that the great English mathematician Bertrand Russell once said "Although this may seem a paradox, all science is dominated by the idea of approximation". The implied approximation here is that "on the average" this hypothesis will be useful to hardworking young (and not-so-young) financial market players in pursuit of their first million, and so they should not hesitate to include it in their intellectual armory.

Exercises

1. What is the bid rate? The offer rate? The spread?
2. There seems to be a great deal of pressure at the present time on pension fund managers to replace some of the bonds in their portfolios by stocks. Why? What do you think about this?

3. Portfolio managers in the US probably prefer a strong appreciation of the US dollar to a strong depreciation. Why?
4. What are "spreads"? Give two examples! What is Goodhart's Law? What is "monetizing the deficit"? What is a bearer bond?
5. *Asymetric information* means that one party does not know enough about the other party to make accurate decisions. *Adverse selection* is the problem created by *asymetric information* before a transaction occurs, while *moral hazard* is the problem created by asymetric information after the transaction occurs. Think about and discuss these terms in relation to loan markets.

If you had no trouble with this chapter, then let me suggest that you examine Chapter 9. That chapter is another non-technical survey that is designed to cover some last minute developments. Let's take a few more exercises.

6. In a formal sense, the first banknotes were issued by the Bank of Sweden in 1661; but earlier, banknotes were 'invented' by goldsmiths in the UK. Explain how this invention could have come about.
7. There is a common belief in finance that in every market there is a fool. Comment! Warren Buffett has apparently said (according to Michael Lewis) that any player unaware of the fool's identity is probably filling that role himself. (The definition of a fool is someone willing to trade an asset for less than its worth, where its worth is determined by the person who valued it properly.) Is this science or nonsense?
8. Pension schemes have traditionally involved pay-as-you-go arrangements, with current employees being taked pay current pensioners. The theory now being offered in many countries is that pre-funded individual pensions are better, where employees have an account in which money must be saved — and therefore invested — until retirement. Comment on these approaches, and what they could mean for the holding of financial assets.