

The Equity Premium Puzzle, Intrinsic Growth & Monetary Policy

SPECIAL INVESTOR'S EDITION

Robert Shuler

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Introduction to the Special Edition

What are the biggest obstacles to your financial health?

What do you think the is biggest threat to your money and security?

1. The FED with their “loose-money” policies?
2. The no-interest business model of Islam?
3. Off-shoring or immigration of highly skilled labor?
4. Productivity improvements to make more with less?
5. Inflation?
6. Deflation?
7. Lack of a gold standard?
8. Your crazy neighbor who votes libertarian?
9. Your relatives who owe you money (or who won't lend you money)?
10. Yourself, because you really have no clue how money works?

Reasonable people disagree on the merits of each item on this list. In fact heads of government and central banks disagree. Europe, led by inflation-averse Germany, has imposed belt tightening and balanced budgets on weaker members, and restrained its central bank. Japan has tried only half-heartedly to provide economic stimulus. Calculations in this book will literally show they are doing ½ enough.

There are a lot of potential threats to your money and security. Why do you think I lump them together, money *and* security?

The *union* of money and security has become obvious in world events since the first edition. Consider...

- A man in Tunisia sets himself on fire shouting “*I just want to work!*”
- Arab countries with very high unemployment follow suit by toppling dictators, resulting in either chaos or new dictators or in one case the vicious new wanna-be Islamic State which beheads people en-masse.
- Ukraine, in miserable economic straights from corruption and theft, seeks to join the EU, sparking rebellion, overthrow of one government, and then a second rebellion resulting in loss of territory to Russia and an on-going frozen conflict.

We have a misguided way of blaming the start of wars on religion or ideology. The facts do not support this. When has religion or ideology found enough followers willing to die in war to stir up trouble in a prosperous country? It hasn't happened. As far as I can tell, no such thing has ever happened in the history of the world.

What was the cause of communist revolutions in Russia? China? Anywhere? What was the cause of the First World War? The Second? What was the cause of the American Revolution?

The communist revolutions are easy. In the west, we are taught they had economic causes. We are also taught communism does not provide the solution, thus the counter-revolution in Russia and the evolution to managed capitalism in China. I'm not sure about what we are taught – plenty of democracies fail economically – but the facts seem to bear out that massive poverty leads to war.

The First World War is harder. Historians still debate the underlying causes, why so many countries piled into the conflict between Austria and Serbia. A leading theory is that Germany was envious of French and British colonial empires, and desired that kind of economic success. However, there is a hidden factor I'll reveal in a moment.

The Second World War is easy, or so everyone thinks. Hitler came to power because of hyper-inflation in Germany. Japan was angry because we refused to sell them oil in response to their war in China. So they bombed Pearl Harbor. Hmm, we should think about that as we impose sanctions on nuclear powers or near-nuclear powers. Maybe it would have been better just to take military action against Japan. Then at least we would not have been surprised. Hindsight of course is 20-20. Germany is the more interesting case. I am going to claim Hitler's rise to power was *not* due to hyper-inflation. It was due to a debt owed in gold. Later I will go into detail about this. Domestic inflation would have been self-adjusting, as German exports would become cheaper and they could export their way out of trouble. Certainly no one doubts the ability of Germans to export! Instead, they owed gold they did not have, and Hitler came to power on the promise to repudiate that debt.

Ah, but the American Revolution you say. It was fought for freedom, for independence, for noble ideas. Bunk. How did the Boston Tea Party relate to freedom and independence? What Minuteman defended an idea? They defended their pocketbooks, as Americans always do.

A group of American businessmen were facing an English Parliament which had given the British East India company an exclusive exemption from tea import taxes. Tea was not the trivial drink we think of today. That attitude resulted after the popularization of coffee, in part because we could not get tea. Civilization is hardly possible without some kind of caffeinated drink! There is no other way to keep up intense mental

effort all day without actually facing the dangers of a physical hunt as did our remote ancestors. What do you think drives sales of Coca Cola, or 5-Hour Energy?

The colonists had seen how the East India Company had turned India into a virtual slave nation through government backed economic domination. They threw the un-taxed tea into the harbor, and decided to fight for their economic liberty. To them, economic success was liberty. Poverty was slavery. We must read their words with these synonyms in mind.

America did have one unique idea. The immigrants mostly had discarded the pedigree of royalty, and felt that any man should have the right to become the economic equivalent of royalty, if he were diligent and applied himself and his efforts or products were valuable to others. That idea resulted in a country in which more people own stock than any other in the world. But most of us are still ruled by older instincts and worry about crooked deals that might undermine that value. It is one thing to worry if this results in constructive prevention of calamity. It is another thing to lose trust and fall back on flawed habits of serfdom. The difficulty lies in figuring out which is which.

Lessons from Argentina

In the last year there has been a court case in New York in which some bond speculators, who bought Argentina bonds very cheaply when it was feared Argentina would completely default, are suing for full repayment. They didn't participate in a negotiated settlement between Argentina and most of the bond holders for partial repayment, rather than bankruptcy and no repayment at all.

How you feel about Argentina and the bond speculators reveals what kind of mistakes you are making with your money.

Yes, that's right. Both sides are mistaken. Both sides potentially are going to lose their money. And #10 on the list above, you and your ideas about money, is the #1 threat to your financial health and security. Not the loose money policies of the FED. In fact, they are doing what they can to save you from your own dark impulses that would result in deflation, chaos and war.

I know of no way to soft pedal this. No way to sneak up on you and persuade you gently:

The ideas which work very well for you in business and family matters will lead the country to war and ruin!

Another way to put it is that the way you vote is killing you. You vote for what would improve your personal position, so that your company can complete that trade deal, or so that you can have cheaper gas or

clothes. The result is that you or your fiends are laid off and cannot find work at half the salary they used to.

The most shocking response I got from the first edition of this book was that there was no particular response to the radical view of the role of the Federal Reserve that I proposed. People would read the book, and the expected arguments would not begin. Instead, they would intellectualize, perhaps even agree, and later in discussions of current events they would *resume their same old views about lending, inflation, trade and productivity*. I might have reached their minds, but I had failed to penetrate their deeply held instinctual thoughts.

People were still worried that quantitative easing (QE 1, 2, 3) was leading to inflation. In fact I hurried to finish the book quickly hoping to head off the disaster of ending these programs too soon, or ending them at all! Productivity increases require not just one time increases in the money supply, but a permanent increase in the *rate of increase* of the money supply. I will show this in simple language with fully worked out “island economy” examples, and then I will show the effects of trade and how it is similar to a productivity increase.

Back to Argentina. What is Argentina doing in a U.S. court? Many of the comments posted on the news articles asked this. Well, Argentina had to agree to this condition to sell the bonds.

Had Argentina previously been a reliable bond issuer? No. They’ve defaulted over and over for the last century. Did bond buyers know this? Certainly. Do bond buyers have some responsibility for taking this risk? In their view, no, they have a contract and the courts will enforce seizure of assets if necessary.

I will reveal thousands of years of the history of money and debt, much of which was hidden until just a few decades ago. Civilizations have never survived a hardnosed view of debt. I will explain how the western world missed this lesson, a deliberate act of the Phoenicians.

European bond holders have seized property in foreign countries before in response to bond default. They did this in the final days of the Chinese Empire. The result was a brief and unstable republic, followed by a communist revolution and the repudiation of all foreign debt. Those bondholders have never been paid. Regardless of the moral superiority of their arguments, if any, they were not effective at acting in their own self interest. In my view, it is the height of moral stupidity to spark revolutions and undermine one’s own financial position.

Do not loan anyone money. Neither relatives, nor corporations, nor countries. Buying bonds is the same as loaning money. It seems like a safe idea. The debt is backed by assets. There is a nearly guaranteed return. The alternative, an equity investment in stocks, leaves the investor with no guarantee whatever. It is a great moral paradox, given all the financial shenanigans in the world, that the second situation should work

better than the first. Even after adjustment for risk it works better. That just should not be. And that is the puzzle, the *equity premium puzzle*.

Lessons from Ukraine

The conflict in Ukraine has been personally upsetting to me because I love the country and its people. I made four trips there in a two year period, spending a couple of weeks in the western portion, and a couple of weeks in the eastern portion. I took an all day bus ride by myself from Kharkov to Lughansk, one of the hot spots of the rebellion.

I became sufficiently comfortable and proficient at moving about in the former Soviet Union that when I got an invitation from a lovely girl living in the middle of a city of 1.5 million people in Siberia, I did not hesitate to travel there. It required a flight as far beyond Moscow as Seattle is beyond New York. And that is only half way across Siberia.

I lived in apartments built when Khrushchev was premier. I rented a car and vacationed in the Altai Mountains, probable origin of Native Americans. I guessed this immediately because of their appearance and customs and traditional teepee-like structures, and later read that genetic analysis has supported the notion. They have a story there about a warrior from one tribe in love with a maiden on the other side of a great raging mountain river, the Katun River, which reminded me of “Running Bear and Little White Dove.” We rafted that river. I fell in the biggest rapids and was pulled out by our guide. I have literally put my life in the hands of people from Russia. You cannot imagine how it affects me to see two countries I love at war with each other.

In western Ukraine I was treated rudely by store clerks over and over. Finally my guide suggested, “It is because you are speaking Russian, and they think you are Russian.” Really? I switched to my Texas drawl. In spite of the fact that most clerks could not speak English, I got immediately better treatment.

Why, I wondered? My guide told me the story of Ukrainian farmers in the 1930s. Stalin tried to get them all onto collective farms. When they refused, he confiscated their crops. They starved, and some of them turned to cannibalism. They have never forgotten. They hate Russians.

Now people do not go hungry there in spite of a poor economy. My guide told me how this works. All over eastern Europe, but especially in Ukraine, you see roads lined with a single row of houses on each side, and long cultivated plots behind each house. Most of the land between the roads is simply vacant and not used for anything. I asked why? Because, she said, the farmers do not trust the market to provide a fair price at harvest time. Each grows food for himself, or to sell privately in a city bazaar or on the street. Ukrainians are not exporting the wheat they once were, and so “the economy” is not doing well, but they are self-sufficient

and feed themselves. She told me that there are few to no homeless people there. The houses aren't what we expect in America, but just about everyone can find someone to take them in.

The east is more industrialized, and has more familiar large fields of crops between the towns. Electric power is more reliable there. Public transportation, both busses and subways, which they call "metro," work much better than any U.S. city I've seen. People in both east and west dress up even to walk down a country road to a bus stop. It reminded me in many ways of the U.S. in the 1950s.

There were almost no people of color there. No blacks. No Arabs. Not even southern Europeans. Very few Asians. But apparently, as we have seen, the two sides of the country intensely distrust one another.

Money is a certificate of trust. It is an IOU. It is a promise to provide goods or services later in exchange for them now. Without trust, there cannot be money. There was no trust in Ukraine. No amount of gold can make up for trust. No one can eat gold, and few will want to clothe themselves with it.

Lessons from Rome and the Bronze Age

I cannot report that I visited ancient Rome. But since the first edition I did read about the economy of the period of the Republic, when Rome was growing into a world dominating force. The most astonishing thing was the sentence which opened the book. No significant amount of gold was ever found in Italy!

Rome was not built on gold. It was built on wheat. Rome never used a significant amount of precious metal coinage. The largest and longest lived empire in the history of the world did not have gold-backed money. They had better concrete than we do, sophisticated contracts and "stock," plumbing and aqueducts, but not gold-backed money. Apparently it is necessary neither for empire nor civilization.

The Bronze Age ended in such complete chaos that of the four great empires, memory of all but one was lost until the mid 19th century. The age had lasted for thousands of years. During that time grain was money. It was stored in temples, with little protection except the wrath of the god. Money was represented in trade caravans by copper bars. So copper money was backed by grain.

Then one day in about 1200 BCE Tulkuti-Ninurta (known in the bible as Nimrod) sacked the temple at Babylon and took everything there. Our modern telling of this has been amended to emphasize that maybe the temples contained a lot of gold, because we don't see how grain could be that important. That is only because we have a lot of grain, especially in America. Ask the Ukrainian farmers about the importance of grain when one is starving.

Nothing happened to Nimrod. He was not struck dead by the god. He kept whatever he took. Uh oh! The money was no longer worth anything. No one could be sure that some armed gang had not already retrieved the deposits represented by the copper bars. Trust was gone.

In Lydia, a region of modern Turkey, a few hundred years later, kings with names like Croesus and Midas started to mint coins out of a gold and silver alloy. This was not because gold or silver were scarce. There was a river flowing down out of the mountains containing so much of the alloy that it would coat anything placed in it! Gold might have been scarce elsewhere, but the Lydians had so much of it they decided to make coins out of it. You may have heard the expressions “rich as Croesus” or “the Midas touch?” Is the fable about Midas’ touch intended to teach us the value of gold? Hardly. It was to teach us that almost anything else is worth more. Midas’ touch was a curse.

And so the Lydians cursed the rest of the world with the idea of gold as money. It worked for the Lydians because they had plenty of it. We will learn how this was like silver in the American west, which they found plenty of, and how the national dispute between western ranchers and miners, and eastern bankers and traders, led to the unfortunate adoption of a gold standard in 1900, followed by two world wars and a great depression.

The repair of that mistake led to the greatest century of economic growth the world has ever known. And if we can avoid lapsing back into that mistake, the economic miracle will continue. But if we go back to making gold and debt our guiding moral principles, it will drive us into serfdom and poverty that will make the Middle Ages look positively bright, and into global conflict with terrible weapons that will make past wars look like a Sunday outing.

Why write (or read) this book

An internet search for “equity premium solutions” produces 21 million hits. The top three academic papers which propose solutions are cited over 5000 times, presumably by scholars offering better solutions. There are 114,000 papers on the subject found by Google Scholar.

Large numbers of papers and books attempt to survey and compare this vast literature. Not only has no consensus emerged, and no “close” solutions, but papers appear regularly denouncing most or all of

them as completely at odds with real data,¹ or having no ability to predict future premiums.²

Do you, or should you, care if interest and bond rates are noticeably lower than stock returns? Or if the effect is predictable or not? Let me ask you a few questions that might elucidate whether this is something you care about, and whether you think understanding “why” is interesting or important, other than perhaps just an afternoon’s entertainment, which it certainly is.

Who or what do you think sets interest rates?

If you are an investor, banker or ordinary citizen with money in a bank or in stocks who reads the financial news, you probably answered “The Federal Reserve,” and added some comment like “of course.”

But if you are an economist, you probably answered “the market.” There is a big difference. Who is right? Does it matter?

What is the value of long term growth? How much confidence do you have in long term growth? How do you capture that in a portfolio?

Unless you have some answer to these questions, you probably don’t invest in stocks and are reading this book only for the politics or social policy or the entertainment of understanding and solving famous puzzles, all good reasons. That is fine, you will get your money’s worth. But the answers are *critical* to someone thinking of investing.

The point is, equity markets more or less define our way of life, making capital from households available to businesses to produce goods and services, the profits from which will be shared with the equity owners and in turn provide for the future needs of households.³

If the reasons for prices and returns are unknown, it is hard to imagine the market, or the act of investing, being rational. And the process might break down at critical times, such as during a crisis.

Economists have shown, at least to their own satisfaction, that flow of capital from households to markets during a crisis benefits the households (investors), the economy, and the country. Yet that is exactly the point at which confidence is lowest, and when policy makers are most likely to tinker with the rules of the game.

Understand this very clearly – without knowledge of the rationale for the prices of equities, there is no possibility policy makers are using

¹ Zheng, L., "A Survey of the Empirical Difficulties of the Consumption Capital Asset Pricing Models," J. Mod. Econ. Manag., vol. 2, no. 1 (2013).

<http://scik.org/index.php/jmem/article/view/665>

² Welch, I., Goyal, A., "A Comprehensive Look at the Empirical Performance of Equity Premium Prediction," The Review of Financial Studies, v. 21 n. 4, 2008

³ At least this is the theoretical view of economists. For example, see Zheng, L., "A Survey of the Empirical Difficulties of the Consumption Capital Asset Pricing Models," Journal of Modern Economy & Management, vol. 2, no. 1 (2013) available open access at <http://scik.org/index.php/jmem/article/view/665>

any kind of valid theory to guide their tinkering. History, which we will get into, shows 250 years (in this country alone) of arguing one dogmatic position against another, the same old positions in fact.

Here is the problem. Rational investor theory suggests all types of investments should “equalize” in price so that the returns from them are basically the same, except for a slight premium for those more risky. That is because rational investors would pile on the better one driving its price up until the two are comparable. The equity premium puzzle, discovered by a friend of mine and published in 1985,⁴ reveals that this is not the case. The returns from stocks over long periods of time are much higher than the returns from other kinds of investments, in particular bonds. So economists have no theory that explains the real world.

Here is how it relates to interest rates. Economists use the interest rates, usually based on Treasury bills with some adjustment for the amount of risk involved, as a discount rate to figure the fair present value (NPV or *net present value*) of the future reward of investments. Bond returns are pretty well explained by this method. Why aren't stocks?

For that matter, a companion puzzle exists which is “Why is the risk-free interest rate so low?”⁵ Bonds are volatile too, and go up and down when interest rates change or confidence changes. What Mehra and Prescott found was that the long term difference in risk between bonds and stocks only justified at most a 1% higher return for stocks (equities), but the measured difference including dividend reinvestment and compounding over long periods was more like a 7 to 8% annual rate (though not of course reliable in a given year).

Obviously you care about such matters if you are an investor. But even if you are only an ordinary job holder, whether you can keep your job is intimately connected to policy decisions made about the national economy. And even if you don't have a job or investments and are living from Social Security or welfare or other government payments, the ability of the government to pay you, and the value of what you can buy, is determined by the fate of our economy.

And you vote for these guys. Maybe you are more interested in immigration reform or military spending, etc. None of those things will work very well without an economy. You vote for the President of the United States, and he chooses the Chairman of the Federal Reserve, and the chairman pretty much runs fiscal policy. It's a much more direct

⁴ Mehra, R. and Prescott, E., "The Equity Premium A Puzzle," *Journal of Monetary Economics*, North-Holland, 15, 145-161 (1985)

<http://www.academicwebpages.com/preview/mehra/publications/>

⁵ Weil, P., "The equity premium puzzle and the risk-free rate puzzle," *Journal of Monetary Economics*, 24 (3), 401-42 (1989) available from Weil's website at

<http://www.philippeweil.com/research/riskfree%20rate%20puzzle.pdf>

connection than other political choices, where you vote for someone who then must fight with other elected politicians to get anything accomplished.

You probably have some opinions. Maybe you like the idea of a gold standard, or abolishing the Federal Reserve. What you probably don't have is facts. Most people studied American History when they were too young to think about money, and do not connect Andrew Jackson's abolition of the 2nd Bank of the U.S. with how they feel about the Federal Reserve. Abolishing the Fed has essentially been tried. But do you remember what the results were? Do you remember the Era of Free Banking? The different methods of financing that the North and South used during the Civil War?

Do you think the U.S. was historically on a gold standard, which was only removed partly by Roosevelt in 1933 and fully by Nixon in 1971? You remember reading about William Jennings Bryan, right? What was the main point of his campaign? But McKinley won, and what did he do in 1900? That's right; the United States was not even on a gold standard until the beginning of the 20th century. And what was the end result?

What kind of money did Henry Ford and Thomas Edison advocate in the 1920s? What kind of money do we have today?

If stocks return such high amounts, why do individually managed investment accounts return on average barely more than money market accounts?⁶ How do you pick stocks? How do you make a portfolio that will actually produce the equity premium that you've read about?

This book will give answers for those questions, good answers that while surprising, you will understand. And even if you never vote or invest, you will have the satisfaction of many eureka moments, and of understanding financial puzzles that have eluded generations and set the trajectories of nations up or down.

⁶ Phyllis Borzi, Asst. Secy. Of Labor testimony to Congress, "From 1998 to 2007 the average annual returns for IRAs were 4.5%," posted by Steve Beck at <http://www.marketridders.com/investing/expected-rate-of-return-nail-it-or-else/>

PART ONE

MONEY & RATIONAL MARKETS

A BRIEF HISTORY & INTRODUCTION

Portfolio Logic

Everyone is an Investor

We all make investment decisions, whether it is deciding on a career, a house, a school or a spouse; to hold cash, bonds, a mortgage or gambling debts. Any of these things is a gamble that affects our happiness, wealth, health and survival. It is pitifully inadequate to measure all these things with one yardstick, money, but that is largely what our culture and common law does. If someone unjustly deprives you of any of them, the remedy is to sue in court and if you prevail you get money.

The question of the equity premium asks us to compare, in our judgment as investors, two very different things: a past debt of a specific amount of money, and ownership of a future activity that has broad possibilities for impacting everything we care about. Hardly a fair comparison. The one is a legal contract with well quantified assessment of its enforcement. The other doesn't exist yet and estimates of what it is are just vague promises. But equity (stock) ownership has been around long enough that we ought to have a handle on what it's worth, and there ought not be a documentable discrepancy in this comparison over periods of hundreds of years. That is the dilemma.

Consider the following statement: "Investors care about *portfolio* returns, *not* about the behavior of specific assets."⁷ Imagine that. John Cochrane, the *asset pricing specialist* at the National Bureau of Economic Research, asserts basically that he does not care about particular stock prices, and presumes "investors" do not care about such details either.

When Cochrane uses the word "investor," who is he talking about? Obviously not someone buying a house or selecting a career. Are you within his definition of investor? Some readers will be and some won't. This book is for all of you, and I'll show you what you have in common and how you differ.

What is your salary and net worth? According to SEC rule 501(a) of Regulation D, an *accredited investor* is "(a) any natural person whose individual net worth, or joint net worth with that person's spouse, *exceeds \$1 million* at the time of purchase; or (b) any natural person who had an individual income in excess of \$200,000 in each of the two most recent years or joint income with that person's spouse in excess of \$300,000 in each of those years and who reasonably expects reaching the same income level or greater in the current year."

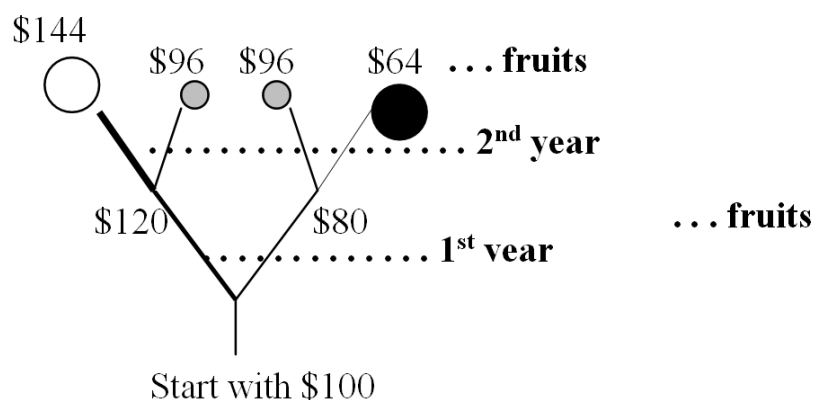
⁷ New Facts in Finance, June 1999, <http://www-gsb.uchicago.edu/fac/john.cochrane/>

These two requirements together, portfolios (Cochrane) and net worth (the SEC), eliminate many people as investors. In fact the dividing line roughly corresponds to “the one percent” we have heard so much about in political discourse of the last decade. The 99% generally invest in a career in *one* industry, perhaps one company. Some of the 1% choose to do this, like Bill Gates and Rupert Murdoch. But the best examples are diversified into a portfolio of companies, like Warren Buffet.

Even if an employed person owns index funds in a retirement account, most of his or her income is from a specific job. Things like education, housing, transportation and children absorb earning power until late in most careers, when finally funds may be available for diversified investing. Small business owners are very non-diversified. CEOs, however, are reasonably well off. They have excess income for investing earlier than most, and often their skill can transfer to another industry.

The Lop-Sided Money Tree

Consider the alternate possible “returns,” future gains or losses from the growth (or not) of your business or investments, as the *branches* of a money tree. I say “alternate possible” because you don’t know what they are going to be. Each alternative that will be decided by future events is a “branch.” Some years you will do well, from luck or careful planning or consumer whim, and some years poorly. For simplicity, let’s say there are two branches (possibilities) each year, one fat and one lean, depending on whether next year is a good or bad year. To keep the numbers simple, let’s say that in a good year you will go 20% ahead, and in a bad year 20% down. If we look out just two years in the future, there are four possible branches, like this:



Right away you see the tree is lop-sided. Only one of four branches is profitable, three are not. With the prospect of equal gains or losses of 20%, you might think the most likely gain would be zero, but it’s not. A gain of 20% followed by a loss of 20%, or vice versa, amounts to a loss of 4%. This is called *compounded returns*. Alternately it may be called a *geometric return*. Do the math with any percentage you care to

use, it's always the same. The bigger the percentage, the bigger the loss in the middle branches.

So the likelihood is that three out of four investors, given such circumstances, will experience a loss. But the *average* return is not a loss. If you had owned four separate businesses, and the future of each one followed a different growth path through the money tree, ending in a different branch, you would not have a loss. The gain from the winner offsets all three losers. Try it. Add $144 + 96 + 96 + 64$ and you get 400. Divide by 4 and that's an average end result of \$100.

Obviously to make money the gains in good years must be greater than the losses in bad years, or the good years must be more likely than bad years, or both. But the principle of the portfolio still holds true. The lucky business owner whom fortune favors will look like a genius. Most business owners, or stock pickers, or gamblers, will make *less than the market average*. And "investors" who own a portfolio with many businesses will make about the market average.

So which are you? Are you the gambler, business owner, stock picker? Or are you the investor with a portfolio?

Mutual and Index Funds

Ah, perhaps you protest that you own mutual funds? Professor Cochrane unfortunately has nothing good to say about mutual funds. The average fund underperforms the market by about 1%. And generations of careful empirical analysis have found no persistence in the performance of particular fund managers. Cochrane admits:

"This fact is surprising. Professionals in almost any field do better than amateurs. . . Apparently the vast majority of funds are not holding well-diversified portfolios on behalf of their clients, but rather loading up on specific bets."

You can of course buy index funds. Even that will not capture average returns for an index dominated by a small number of very large companies, like the NASDAQ 100. For an index where the companies are similarly sized, it should work. But capturing average returns is not very exciting. In any other walk of life, it is considered dull and even marginal to be "average."

Efficient Markets vs. Private Returns

That brings us to the second aspect of being an investor. Not only must you have a balanced portfolio, which disqualifies all small business owners since they are over-weighted in the business they own, but you must be accredited. You must have a very high income or a net worth over a million dollars. Why?

To cash in on private returns, that's why. Economists classify returns on investments as either public or private. Different rules apply to each.

Public returns result from investment in the shares of public companies, available to everyone. The trouble with public investments is something called the Efficient Market Hypothesis, or EMH, originally postulated by Eugene Fama in 1970,⁸ and popularized by Burton Malkiel in "A Random Walk Down Wall Street." As defined by *investopedia.com*, EMH states:

"... it is impossible to beat the market because prices already incorporate and reflect all relevant information."

EMH arises from competition among investors, and from the unfortunate fact that returns are relative to current price. If investors know a company will do well, they bid up the price of its shares until the returns that can be realized by buying them are comparable to other companies. Without stopping to ponder the subtleties of this surprising assertion, let's see how a wealthy accredited investor avoids being trapped into mediocrity by EMH.

Private returns result from proprietary investment opportunities. These may be protected by anything from a de facto monopoly to a patented process, from a secret formula to the simple time lag a competitive startup would require. The important thing is that in the end, the shares are not sold to the public. They are only available to accredited investors, that is, to people who are already wealthy. The public is not allowed to bid up their price, reducing their returns to the efficient market average.

You can of course start your own business, and that is proprietary. But unless you are very wealthy, you can only start one business, not a portfolio of them, and the lop-sided money tree effect will destroy 80% of small businesses in the first 5 years. In order to feasibly have a portfolio of proprietary investments, you must be able to buy into other people's proprietary businesses. Whether you approach this from the point of view of venture capital or hedge funds, you will find the entrance requirements are the same. You must already be wealthy.

At least, that was the theory a number of years ago. There are signs of some change, which probably represent market pressure on private returns, pushing them toward efficiency. Congress has authorized a class of investments called Business Development Companies. These are a little bit like Real Estate Investment Trusts (REITs) or Royalty Trusts

⁸ Eugene F. Fama. Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25:383-423, 1970.

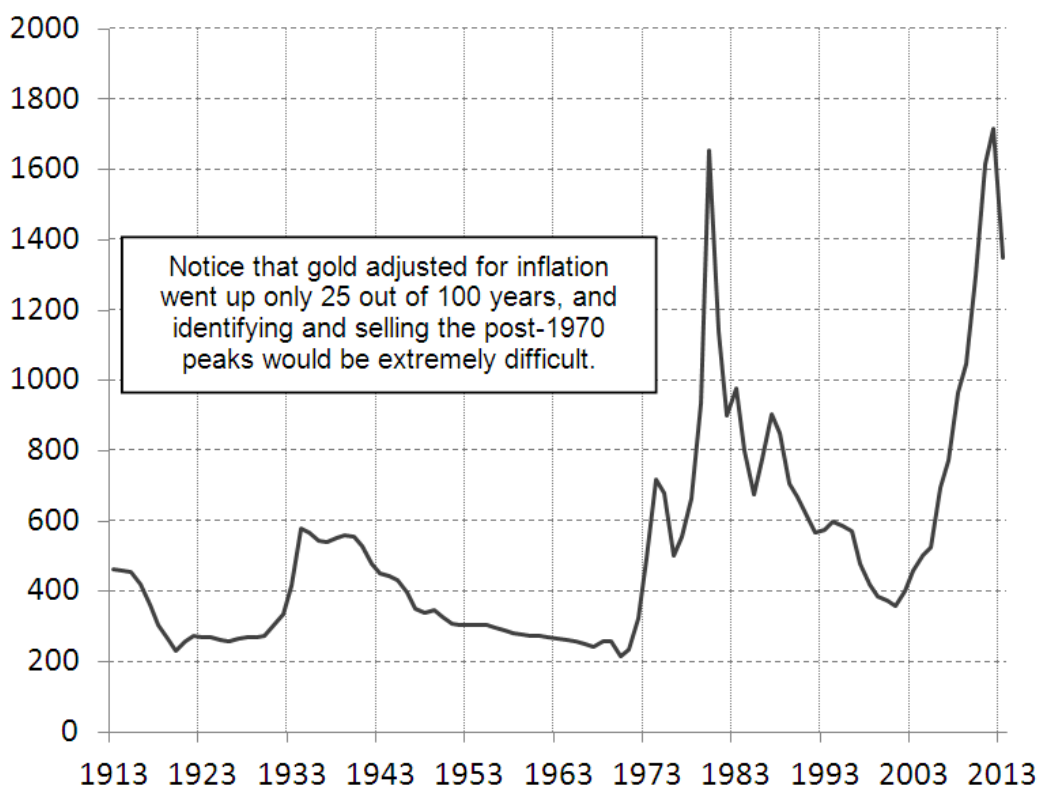
or Partnerships in that as long as the company passes along most of its income as dividends, it is not double taxed by the government.

Examples of BDCs include such companies as Hercules Technology Growth (HTGC) and Horizon Technology Finance (HRZN) and many others that you can find with a simple search. They are not exactly the same as venture capital funds. VC funds don't pay dividends, betting entirely on the growth of their startups. BDCs may hold equity in small or startup companies, but in addition are likely to make loans to such companies. For example, the two I cited are somewhat different in this regard.

Trading vs. Investing – Zero Sum Games

We have seen that the returns of a stock, or a portfolio for that matter, over time suffer a loss due to compounding. Over the space of available investments (companies) a portfolio is a tool to reduce this effect and capture something closer to the true average return. Even the portfolio approach suffers if over time the whole economy and thus the whole market fluctuates up and down. Such fluctuations are known as volatility, and compounding losses are one of the reasons volatility is considered bad.

Not everyone considers volatility bad. Traders and speculators depend on it. Traders are not investing in the long term business and do not care about future returns. Traders often invest in commodities like wheat or sugar or copper or gold, which are not business activities and over the long term produce no returns in excess of simple inflation. Economists consider such activities to be zero sum games. The total sum of all gains has to be zero. That sum includes presumably the profit of one trader, the loss of another trader, and the commissions and fees charged by trading exchanges and brokers. So from a trader perspective, it is a slightly negative sum game. If one believes in efficient market theory there is no money to be made. Obviously, traders do not believe in EMH.

Inflation-adjusted price of gold⁹

In fact, there is another puzzle involved in efficient market theory. Why is there so much trading? Some transactions are just liquidation to meet expenses, or represent investment of new funds. A few traders probably are acting on inside information. But the large volume of trading, often driven by automated algorithms, is derisively called *noise trading* by EMH theorists, and considered uninformed.

The trading puzzle can be re-stated somewhat obliquely to the effect that all capital is not efficiently allocated. There is some non-efficient capital. Perhaps even a majority of capital is inefficient. Capital is constantly being generated as business profits, savings from salaries, contributions to pension funds, etc. There are two things to note about this capital.

First, if it is truly uninformed then its effect on markets is roughly neutral. It should not prevent equalization of returns, for example, by itself. If there is a large flow, it might create a general asset bubble but it would either affect assets randomly, or through the erroneous belief in a fad, which would end dismally for most participants. Or it would affect all assets similarly, as in a general boom. It would not explain a long term favoring of bonds over stocks, necessarily, as would be required to explain the equity premium.

⁹ Data sources: CPI from Bureau of Labor Statistics, Gold prices from <http://www.measuringworth.com/datasets/gold/result.php>

Second, it suggests the adoption of a weaker form of the EMH, one based not so much on knowledge as on evolution. Capital which is efficiently employed tends to increase, and other capital tends to decrease as it earns lower returns. This *adaptive market hypothesis* was proposed by Andrew Lo.¹⁰ But there is not general agreement that it is a valid viewpoint. We assume it produces a weaker form of the EMH because it does not guarantee the immediate results we would expect from “knowledge,” but in a sense it is stronger because it works regardless of whether the complete knowledge assumption of traditional EMH is true or not.

Steady State

Above we discussed booms and fads. These are examples of transient effects in markets. Obviously during a transient one asset or another may perform better, and then when the transient is ended this does not continue. We’ve also mentioned volatility, which can include very short term transients, some never explained – even computer glitches.

In the Equity Premium Puzzle, the problem is to determine a cause for a very long term, presumably permanent state of affairs. This is called steady state, or equilibrium. And it is much easier than working with transients. For example, periods of inflation and deflation can last a couple of decades, and have serious effects on the returns of bonds and stocks. Wars also have a large effect. It can be very hard to quantify the driving forces or the effects of such transients.

But to analyze the equity premium we really only have to consider periods greater than 20 years, or perhaps centuries. Very simple mathematical models can be used. Generally speaking, without transients differential equations are not necessary. Even currency fluctuations are not very important. If a currency trended steadily down for centuries, for example, it would essentially go out of existence.

There are some things which do trend for centuries. At least since the Renaissance, there has been a trend of increased travel and communication, bringing trade. And there has been a trend of increased industrialization and automation. These very long trends are fair game. The rate of change in the trend becomes a steady state parameter of a roughly constant value.

Even though a particular transient is not eligible for consideration because of its shortness compared to our time horizon of interest, might the general level of such transients, for example volatility, play some role?

¹⁰ Lo, Andrew W., “The Adaptive Markets Hypothesis: Market Efficiency from an Evolutionary Perspective,” *Journal of Portfolio Management*, Forthcoming. Available at SSRN: <http://ssrn.com/abstract=602222>

Possibly, but it does not seem so. I spent a lot of time chasing this idea. But at the end of the day, compounding losses due to volatility amount simply to a reduction in average returns, and possibly an increase in risk. But many authors have already modeled this risk in a variety of ways, and Mehra and Prescott argue none of them explain the equity premium.¹¹

Borrowing and Equalization

Mehra at one time considered whether borrowing constraints might influence the equity premium.¹² The idea is that young people who have the time horizon necessary to realize the equity premium (which can disappear for a decade or two at a time) might like to do so, but their income is in the future, and they do not have sufficient credit to borrow enough to make much difference in markets. Middle-aged consumers do not have the investing time window to guarantee they will capture the equity premium, and hold a balanced portfolio of equities and the more predictable bonds – thus reducing interest rates and contributing to the equity premium.

It is an interesting idea, and indeed later we will use a much stronger form of it (which has nothing to do with young people). But it brings up the question of how equalization works, and its relation to borrowing. The non-economist reader may be assuming that the natural demand for investments will be proportional to their value as recognized by all or most investors. Indeed, as we saw earlier even if investors do not recognize the demand, over time a kind of adaptive selection corrects the market by granting superior returns to the investors whose preferences are rational, even if they do not know why. But the premise of equalization in standard efficient markets theory acts more quickly. Only one or a few investors can accomplish equalization through arbitrage. You see this when a corporate acquisition is announced at a premium price over the current market price. If it is believed the acquisition will go through, the market price immediately jumps close to the offered price. Professional arbitrageurs will buy arbitrary quantities of stock, and make a profit on the small difference that remains between the price they offer, and the acquisition price.

The key fact is that the arbitrageur does not have to have in reserve the amount of money needed to make such an arbitrarily large purchase. He or she can borrow any amount necessary, because lenders

¹¹ Mehra, R. and Prescott E., "The equity premium in retrospect," in: G.M. Constantinides & M. Harris & R. M. Stulz (ed.), *Handbook of the Economics of Finance*, edition 1, volume 1, chapter 14, pages 889-938, Elsevier (2003).

¹² Constantinides, G., Donaldson, J., Mehra, R., "Junior Can't Borrow: A New Perspective on the Equity Premium Puzzle," *The Quarterly Journal of Economics*, February (2002).

are very confident they will be repaid. Borrowing is key to classical equalization theory, and anything which interferes with borrowing will interfere with equalization.

Where do lenders or banks get arbitrary amounts of money to lend, or who do they in turn borrow it from? That is another question. Of course, for transactions such as described above they can use short term money. Short term money cannot capture the equity premium. In the very short term, during a financial crisis, lenders (depositors) may even have to pay (a kind of negative interest) to keep their money safe, especially for large deposits.

Non-linearity

The term *linear* refers to addition, and also multiplication by a constant as in algebra equations which describe a straight line. In a linear system, things add up. The returns of the combination of A and B would be equal to the returns from A plus the returns from B. This is certainly true for data expressed in currency amounts like dollars. If A pays \$X dividends and B pays \$Y, and I own one share of each, my total dividend is $X + Y$.

If, say, shares in both A and B are \$50, so that I have a \$100 portfolio, and A goes up 10% and B goes down 10%, then the 10% gain on A is \$5 and the 10% loss on B is -\$5 for a net of zero. So far all is linear.

But suppose both A and B go up 10% one year (plus \$10, so I now have a portfolio value of \$110), and down 10% the next (down 10% of \$110 is \$11). Now I have a portfolio value of only \$99. This can be obtained by adding \$10 and -\$11. But it cannot be obtained by adding 10% and -10%. With respect to percentage returns, the combination of the two years is non-linear.

Business returns are fairly expressed as percentages because generally they are proportional to the size of the business. A small business with a small inventory and few stores is limited in both its upside and downside. A large business with many stores (or whatever its profit units are) and a large inventory has both larger upside and downside. Percentages are the reasonable way to look at business returns.

Compounding is especially evident in the long term returns of so-called *ultra* or leveraged Exchange Traded Funds, which offer 2x or 3x times the price movement of the basis asset. For example, UPRO offers 3x the S&P 500 index on a daily basis. Consider 3x (three times) the + and - 10% example above. That would be a gain of \$30 the first year, and a loss of \$39 for the second year, with a final portfolio value of \$91, nine times the loss of the underlying asset. Not three times. The 3x is only per *day*. In this example over two years it was 9x down.

This particular kind of non-linearity will not explain the equity premium. But it is a simple example of something more complex that we will investigate later. It will turn out that the kinds of portfolios (e.g. index based) used in the equity premium are highly non-linear over long periods, and their value is simply not equal to the sum of their asset values, *strange as that may seem*.

Financial Gravity

You can see a kind of *gravity* in the examples of non-linear returns. Due to volatility, if an asset is not actively going up in value then it drifts down.

It is possible to formulate physical gravity in this way also, and obtain a theory very similar to General Relativity, but able to integrate with Quantum Mechanics. In fact my work on equity valuations in the early 2000's planted this idea in my mind and eventually led me to formulate such a theory, which was published in January of 2013.¹³

Summary

Whether we purposely invest in the stock market, or whether we accidentally invest wherever our job or pension plan takes us, we are all investors. A successful investor must have a strategy for dealing with the naturally lopsided distribution of future returns based on growth. This is an artifact of the mathematics of proportional returns (i.e. percentage based), and runs somewhat contrary to the expectation of "average" returns. More complex non-linear properties of portfolios will be developed later for dealing with equalization pressures on one side of the equity premium.

The efficiency of markets is a separate issue, which is influenced by borrowing costs and constraints, and influences the equity premium from another direction.

This chapter has explained the basic mechanics of portfolios and returns which we will need. However many other factors are needed – inflation, productivity, politics, growth. Next let's peak into the origin and meaning of money.

¹³ Shuler, R., "On dynamics in a quasi-measurement field," Journal of Modern Physics, 4 (1) pp. 113-129 (2013). Available at <http://www.scirp.org/journal/jmp/>

Finance Dawning

What is Money?

You can't eat it or wear it. It won't keep you company. And even in urban settings money may be augmented by barter or by an intrinsically valuable trading commodity such as salt.¹⁴ Defining money is a hard problem. So, why do we care? Everyone uses it well enough.

Here's a reason. Economists model investor behavior as "rational decision making." They assume investors maximize risk-adjusted returns based on all known information. They model consumer behavior in a similar fashion, substituting some other maximizing function. Do you make rational decisions about money? Or are you influenced by hidden feelings and attitudes?

Marketers don't believe in a rational model. When was the last time you saw an automobile ad which presented charts and figures that would support rational decision making?

Somehow I don't think psychologists will go along with rational decision theory either. They will say we make decisions based on emotion and belief. Hotter personalities will go with emotion, and cooler heads will ponder their well-considered beliefs. From the sea of available facts, both types are more likely than not to select information that supports their decision.

Since an investor is a consumer of investments, and since the future return on investments isn't nearly as certain as the performance of an automobile, investment decisions are even more likely to be made based on emotion and belief. Systems of investing, capital markets, ways of thinking about business and growth, notions of fair business practices, feelings about trade and competition are partly matters of emotion and belief.

Belief about what?

Some beliefs will be about money specifically. But if we can pin down what money is, we'll identify a broader set of beliefs. We'll notice factors like trust, expectation, how we feel about obligations, whether we return favors, confidence in finding help when we need it.

Let's start with a barter transaction, stretch it so that we need money, and see if we can identify what money is. Say you help your neighbor build a fence, and he gives you some chickens. I'm going to go to money in three simple steps.

In step one, say you don't need anything from your neighbor today but wish him to repay the favor in the future. Or say he doesn't have

¹⁴ The 1999 Iranian film "Children of Heaven" illustrates use of barter and salt-based transactions in an urban setting.

anything for you right now. In either case, he can “promise” to repay the favor at a future time. If your neighbor forgets a few of these favors you may ask him to write down the promise, so he hands you an IOU specifying what he has promised.

Debt, Risk and Returns

The IOU is money that is good only between two people. It is like two things we routinely use. First, it is a contract, an agreement between two parties, which requires something from each of them – in this case the help with the fence from you, and the chickens from your neighbor. But it is also a debt, because you have already delivered your end of the deal. By giving you the IOU, your neighbor becomes a debtor, and you become a lender.¹⁵ But unlike such formal instruments as bonds or loans, the IOU probably doesn’t specify exactly when the debt is to be paid. It will be paid whenever your neighbor has chickens and you want them.

What do you think is the earliest IOU we know of? Is it a piece of parchment or a stone tablet with something written on it? Do we have an example that old?

If that’s what you guessed, guess again. IOU’s are older than writing. In fact, shortcuts in the creation of IOU’s are thought to have precipitated the invention of writing.

In 1929 German archaeologist Julius Jordan dug a trench into the Inanna temple precinct in the ruins of Uruk, city of ancient Sumer, now in southern Iraq. In addition to the goddess’ home and storehouse, an elegantly decorated colonnade, and stone steps of the temple, he found a number of small tokens “shaped like commodities of daily life: jars, loaves and animals.”

It appears these tokens were kept in hollow clay envelopes about the size of softballs, called bullae. In order to keep from having to break open the envelopes every time someone wanted to check the contents, marks were made on the outside, probably by imprinting the tokens in the clay. Thus the symbol for “lamb” was the imprint of a small carved lamb in the clay. Eventually more abstract symbols developed, for example the symbol for “sweet” developed from the imprint of a jar of honey, and finally a stylus was used to directly make the imprints, skipping the step of first carving tiny figures.¹⁶

¹⁵ Paul Millett proposed in *Lending and Borrowing in Ancient Athens* that lending did begin as neighborly reciprocation in rural societies.

¹⁶ A detailed theory of the co-development of money and writing has been put forward by Denise Schmandt-Besserat in *Before Writing*, and *How Writing Came About*. You can also find a concise summary in Harriet Crawford’s *Sumer and the Sumerians* in the chapter on writing and the arts, or online in the first chapter of

The bullae are interesting for their role in the development of writing, but were they the first money or IOU's? Prior to writing, usage of objects must be inferred from the context of archaeological finds, so we cannot be entirely certain. But it seems as though grain and other food items were lent and used as money beginning between 8000 and 5000 BCE. If so, then at one time you *could* eat money! Before that, perhaps shells were used.¹⁷

With any debt or contract there is a risk of non-performance. Your neighbor may meet with some unfortunate accident, or move away. Or he may issue IOU's to other neighbors for the same chickens, which is kind of like a country printing more money than it has goods and services. Of course if the neighbor's chickens multiply, all the IOU's are good, so money can expand with growth. To the extent IOU's are like fiat paper money (or stone or clay as paper precursors), then fiat paper money is very old and natural.

If you sense the risks are significant, you may request and your neighbor may consent to give you an extra chicken beyond what was originally agreed. You could probably work this out so that on average, in dealing with all your neighbors, the extra chickens you'd get would balance the chickens you lost on bad IOU's.

This is a bit like "interest," but notice it is not like "investment." You have no expectation of net profit from this sort of lending.¹⁸ You may benefit from the trade, but you are only just breaking even on the risk adjusted lending. The purpose of the "extra" chicken is to get what you are entitled, so that on average favors are returned as often as given. Also notice that I just used the word "return" to describe the repayment of the debt, comparing it to the return of a favor.

Since we presupposed a barter economy, it will be evident to the holder of an IOU that he can exchange it with a second neighbor for something else, provided the second neighbor is acquainted with the first, and feels confident the first will provide him the chickens.

We may find that other chicken ranchers generally are willing to honor the IOU, enabling you to redeem it for chickens as specified, but from someone else. Suppose the first neighbor has gone hunting for two

William Goetzmann's *Financing Civilization*. See <http://viking.som.yale.edu/will/finciv/chapter1.htm>

¹⁷ See *A History of Interest Rates* by Sidney Homer & Richard Sylla, 3rd ed. revised 1996, pgs. 19-20.

¹⁸ Millet [see earlier footnote] also confirms that profit-oriented interest developed later, in connection with explicit contracts and urbanization.

weeks just when you have an appetite for chicken dinner. You may seek to trade the IOU to the second neighbor for chickens. She may honor it for reasons already stated, or for the additional reason that she would like to encourage you to trade regularly with her. She promises she does not care for hunting and will always be available whenever you are hungry. She takes the IOU and replenishes her chicken stock from the first neighbor when he returns. A chicken economy develops.

Trading Commodities and Unlike Goods

A barter economy naturally trades unlike goods, such as fence work for chickens, and so at first I didn't think the development of a trading commodity was part of the story of money. But in a barter economy we might have all sorts of rules or superstitions about what kinds of things could be traded for what other kinds of things, and what could not, and even who could trade them. In a money economy, the idea that "*everything has a price*" is a principal feature, and one which generates strong feelings, often negative. So I'll propose step two on the road to money is the establishment of a universal trading commodity.

We began by mentioning salt as a trading commodity. Salt would have the advantage that it is relatively imperishable and portable, as compared to chickens. Later we'll discuss the use of scarce commodities such as silver or gold.

The unique feature of a trading commodity is that it universally equates all things. If we can convert chickens into salt, and salt into hogs, then we can indirectly convert chickens into hogs, even if there is a local prohibition against trading chickens for hogs. To give this example more weight, suppose neighboring tribes agree to loan each other warriors when needed for self defense. This is a delayed barter transaction, like our original fence work now for chickens later. The tribe first needing help would present an IOU to the helping tribe good for one battle. Lives may be lost in battle. It is a very serious thing. Unless the second tribe were starving, it is unlikely they'd accept chickens for their help. But if the first tribe had been accumulating a universal trading commodity for decades, it might be equivalent to chickens for a lifetime, and they might be able to pay for mercenary help with it.

To re-state so this is absolutely clear, so many chickens all at once would not be useful. They would have to be housed and looked after, which is impractical. An IOU for that many chickens is not credible. The other village might not last that long, or might try to back out of the deal in a bad year. But by using a non-perishable trading commodity, suddenly we can have the trading equivalent of a lifetime supply of chickens or other food, and can purchase human help at risk of their lives. In other words, we begin to be able to equate this precursor to money with human life. It is a strange twist on so simple and convenient an idea.

Another interesting feature of the ability to accumulate a large amount of a universal trading commodity is its attractiveness to thieves and military adventurers. Probably it wasn't the cause of warfare. Perhaps it added a new reason. Possibly it made warfare less deadly if the thief was content to carry off the trading commodity, leaving the chickens and people behind.

Every trading commodity has some source, and not only would stocks of the commodity be coveted, but also the sources. While there are many reasons for the acquisition of land this adds another one, which can become strong enough to impact history, as for example in providing a large part of the Spanish motive for colonization.

It appears universal trading commodities would have large advantages. For example, a traveler could carry a little salt or some jewels, and trade for supplies along the way, not having to carry everything on his back. Along with these advantages came some liabilities. The traveler, already wary of thieves, would have added substantially to the criminal motive by carrying a large quantity of the trading commodity.

Investing, Business and Growth

The IOU of the first step is not quite modern money, but already we have familiar concepts like debt, contracts, risk, and interest or return. We even have monetization problems, like inflation which occurs when too many IOU's are issued against the same chickens or some of the chickens die, and the remaining chickens must be divided among the outstanding IOU's. We are most of the way toward money, though a difficult step remains.

What we don't have is the concept of excess returns, the kind investors seek. We won't get it in the next step either because it doesn't come from money. It comes from the operation of a business. For example, you find you can acquire chickens by breeding, barter or the redemption of IOU's. Instead of eating the chickens you feed them, and barter away the eggs. Or you can invest further by keeping and hatching the eggs and bartering away the young chicks. The idea of investment, or excess return, seems to come from the excess productivity of animal husbandry and intensive agriculture, both of which developed about 10,000 years ago. If the idea wasn't around before, it surely developed at that time. Barter is probably an older notion, along with some limited ideas of money.¹⁹

¹⁹ Theories of the development of money (see earlier footnote) deal with a period well after intensive agriculture and animal husbandry, which both originated 10,000 years ago at the end of the last ice age. My statement about some idea of

In ancient Sumer, where as we have seen writing seems to have been invented as an outgrowth of financial contracts, the word for “interest” [*mash*] is “calves.” In ancient Greece interest [*tokos*] also refers to cattle offspring. The Egyptian word for interest [*ms*] means “to give birth.” The productivity of intensive agriculture gave rise to cities because the surplus allowed some people to specialize into non-farming trades. Urban centers, where not everyone knew each other and where various specialized trades were not as interchangeable as farm skills, probably gave incentive to the use of explicit contracts like our IOU, and also the promise of interest returns as a “sweetener” to motivate transactions.²⁰ This idea is distinct from the idea of “risk” interest we discussed earlier, which accounts only for the possibility of not being paid.

Interest in Sumer was well established and regulated by the government at a maximum of 20%.²¹ At times no “period” was specified in the regulation, and lenders worked around the regulation by lending for shorter and shorter periods. Longer loans up to 30 years with a type of compound interest were also known, along with methods for calculating their total return.

The idea of barter exchange increased the well-being of both parties. But the surpluses from “growth” of crops or animals, if they can be accumulated, can be used to gain a large amount of power. A Hebrew story tells of how Joseph foretold of coming famine in a dream, and advised the Egyptian pharaoh to place excess grain in storehouses. Archaeology cannot confirm this specific legend, but it does suggest Egypt used such storehouses. According to the legend, the Hebrews became dependent on Egyptian grain, and eventually became slaves. That’s a good point to remember.

If you always have to take chickens, or help with fences, or something tangible in return, your favor-performing will be limited to what you need, or you might perform favors just because you have the time and like to be helpful. But if you can accumulate IOU’s which are easily exchanged, and easily stored, this gives you power. Your neighbors may be willing to do some pretty strange things for you if it will keep you

money likely being older is conjecture based on the observation that pre-agricultural hunter-gatherer cultures are known to use beads or tokens as an exchange medium.

²⁰ See William Goetzmann’s *Financing Civilization*, <http://viking.som.yale.edu/will/finciv/chapter1.htm>

²¹ In the Hammurabi law code, circa 1800 BCE, loans of silver were regulated at 20% and loans of grain at 33 1/3%, repayable in kind. *A History of Interest Rates* by Sidney Homer & Richard Sylla, 3rd ed. revised 1996, pg. 3.

from calling in all your IOU's at once. Or they may stay out of your way, not wanting to remind you of their debt.

Confidence

Step three is to increase confidence in repayment. A simple way to do this is to use a Big Man. If the Big Man is known to keep his or her word, has loyal servants and guards, extensive holdings, and is owed favors by many neighbors, your favor to this person is likely to be repaid. If the Big Man's heir promises to maintain the obligations of the estate, even death will not cheat you. Other neighbors who depend on the goodwill of the Big Man are more likely to repay both you and the Big Man, since they could suffer substantial loss of goodwill. The Big Man serves as a kind of credit bureau. Of course if he's a mean jerk, the idea could backfire.

Reputation would be very important in an IOU-based economy, whether it was reputation among a network of friends, or with a Big Man, chief, or temple priest. But in an urban environment, reputations would be harder to keep up with.

A modern example of money backed by the reputation of a Big Man is the issuing of currency by local warlords in Afghanistan during the chaotic period after the Russians withdrew, and before the American invasion. The money would typically carry the name and picture of the man who guaranteed its value.

Another way to increase confidence would be for a group of neighbors or a community to agree to back one another's IOU's. Modern examples include the practice among airlines of honoring each other's tickets in emergency or in case of default. This is done precisely to increase confidence, encouraging more people to fly. Another example is the practice among dry cleaners of honoring each other's coupons. This is done for competitive reasons. But it has the secondary effect of increasing confidence in the coupons, and increasing their utility.

Problems immediately arise in community backed money that discourage the use of easily created paper IOU's, or coupons. The system is open to abuse by someone who prints a lot of coupons, inflicting the burden of honoring them on competitors, resulting either in higher prices (inflation) to offset the coupon losses, or in refusal to honor the coupons. The coupon problem can be solved with "hard currency." Hard currency uses various methods to prevent unwarranted creation of surplus IOU's. A simple example is something scarce, like silver or gold, which perhaps is already in use as a trading commodity. A design pattern can be added which is hard to duplicate, further discouraging copying.

In the hard currency system, your neighbor with the fence cannot just write an IOU. He would either use money on hand, say from selling

chickens last year, or he would borrow money from someone keeping a store of it. This moves the “borrowing” from random and unreliable transactions between individuals, to organized borrowing from a Big Man, who is probably associated with the religious or political authorities, and who is better able to know reputations and demand repayment. So the community-backed and Big Man systems of increasing confidence can work together.

Sumerians later used silver disks with holes punched in them as money. Civilizations such as Greece and Rome used coins stamped with the images of emperors or deities. Pull a nickel out of your pocket and look at the flip side. There is an engraving of Monticello, which in stylized form looks much like a temple.

The Big Men pictured on American money are all dead. Why is this? Recall that one of the advantages of money backed by a Big Man is the promise of the heirs to maintain all the obligations. So on the dollar and the quarter we have a picture of George Washington, first president and symbol of the unity and strength of the USA. On the five dollar bill and the penny we have Lincoln, who also preserved unity and thus the promise of fulfilling obligations. Jefferson, on the nickel, acquired the Louisiana purchase, and Jackson, on the twenty, secured it. Feminine impressions on US money seem to be most common on the silver dollar, and include lady liberty (who might be compared to goddess images on ancient money), and Susan B. Anthony, who secured women’s role in maintaining the obligations of the country. Citizens of other countries will, I’m sure, be able to construct their own similar examples.

A final aspect of confidence building is to make money “legal tender.” This happens when the backer, community or Big Man, insists that money be accepted in payment for all debts. We find money being accepted not just for material debt, but for crimes and damages.

Some Consequences of Money

So, money really wasn’t very complicated. Rural barter exchange was transformed in obvious ways by the needs of an urban environment into thoroughly modern money, in just three simple steps. But along with money came debt as an intrinsic part of what money is. And along with building confidence in money came an increase in the coercive power of the temple and later the government, as well as the potential for individuals to accumulate enormous power.

As agricultural surpluses allowed cities to develop, and as religion was viewed as important in assuring favorable weather and advancement of agricultural seasons, people built temples in the cities. These came to

hold as much as 20% of the land in ancient Sumer,²² and much of the silver.

It has been suggested that the government of Sumer actually preferred its citizens in debt, as they were more productive and crop yields were higher. This does not quite square with the fact that they periodically declared general debt relief, much to the consternation of creditors. By 2000 BCE default on loans to farmers was the chief cause of land transfers, and it is still a cause of the loss of family farms today. If one accepts the idea of making large profits from lending, it seems one must also accept the idea of foreclosing on an unfortunate debtor, and to some extent repudiate the original idea of reciprocal mutual aid.

The practices both of lending with interest, and of periodic debt relief, spread widely in the ancient Near East. We have some interesting records from the Hebrew culture in what Jews call the Torah or what Christians call the Old Testament. Debts are forgiven at regular intervals of seven years,²³ although this seems to apply only to Hebrews and not to foreigners.²⁴ Every fiftieth year there is to be a “jubilee” in which land is returned to its original owner,²⁵ though houses inside walled towns are excluded.²⁶ Advice is given not to co-sign a loan,²⁷ and in giving a loan to

²² At one time it was thought the Temple owned all the land in a Sumerian city state, but this has been shown to be incorrect, a result of not having a full estimate of the size of the city state.

²³ Deuteronomy 15:1 “At the end of every seven years there is to be a general forgiveness of debt.

²⁴ Deuteronomy 15: “2 This is how it is to be done: every creditor is to give up his right to whatever he has let his neighbor have; he is not to make his neighbor, his countryman, give it back; because a general forgiveness has been ordered by the Lord. 3 A man of another nation may be forced to make payment of his debt, but if your brother has anything of yours, let it go;”

²⁵ Leviticus 25:10 “And let this fiftieth year be kept holy, and say publicly that everyone in the land is free from debt: it is the Jubilee, and every man may go back to his heritage and to his family.”

²⁶ Leviticus 25: “29 And if a man gives his house in a walled town for money, he has the right to get it back for the space of a full year after he has given it up. 30 And if he does not get it back by the end of the year, then the house in the town will become the property of him who gave the money for it, and of his children for ever; it will not go from him in the year of Jubilee.”

²⁷ Proverbs 6: “1 My child, if you co-sign a loan for a friend or guarantee the debt of someone you hardly know – 2 if you have trapped yourself by your agreement

require collateral from co-signers.²⁸ People can become slaves as a result of debt.^{29 30} Debtors can be roused into an army of rebels.³¹

The Phoenicians are credited with not only spreading alphabetic writing to the Greeks, and hence to the rest of the western world, but also the idea of mercantile interest. It seems to have been thought more suited to dealings with foreigners than fellow citizens, as evidenced in Hebrew culture, and so the Phoenicians *did not spread the idea of debt relief to the west*. The condition of debtors became a severe problem in Greek and Roman culture.³² Westerners took up the practice of throwing people into prison until they paid their debt – a notion that did not diminish in some quarters until the 1800's.

By the Christian era, debt loomed so large in the human psyche that it was the central metaphor of man's relationship with deity. Humans are in debt to God because of universal sin. The debt is forgiven only when paid by another party, Jesus, probably reflecting hundreds of years of Greek and Roman culture and the demise of the idea of ritual debt relief. No mention is made in the Christian era of a seven year release from debt or a fifty year return of land. Instead we have cancelled debt

and are caught by what you said – 3 quick, get out of it if you possibly can! You have placed yourself at your friend's mercy. Now swallow your pride; go and beg to have your name erased. 4 Don't put it off. Do it now! Don't rest until you do. 5 Save yourself like a deer escaping from a hunter, like a bird fleeing from a net.”

²⁸ Proverbs 20:16 “Be sure to get collateral from anyone who guarantees the debt of a stranger. Get a deposit if someone guarantees the debt of a foreigner.”

²⁹ Exodus 22:3 “A thief who is caught must pay in full for everything that was stolen. If payment is not made, the thief must be sold as a slave to pay the debt. “

³⁰ Amos 8:6 “And you mix the wheat you sell with chaff swept from the floor! Then you enslave poor people for a debt of one piece of silver or a pair of sandals. “

³¹ 1 Samuel 22:2 “Then all the people in distress, in debt or embittered began gathering around [David], and he became their leader; there were about four hundred with him.”

³² The classical history of Greece began with the laws of Solon in 600 BCE, drastic reforms necessitated in part by widespread debt and personal slavery for debt. Limits to interest were abolished, but so was personal slavery for debt. Rome's legal history began with regulation of debt, in about 450 BCE, also precipitated by excessive debt. Interest was limited to 8 1/3%. Personal slavery for debt was allowed but physical well being protected. *A History of Interest Rates* by Sidney Homer & Richard Sylla, 3rd ed. Revised 1996, pg. 3.

being equated to love.³³ Children are said to owe a debt to forebears.³⁴ Failure to forgive debts is equated with sin.³⁵ Paradoxically, we have demand for high returns³⁶ alongside exhortations to lend expecting no return.³⁷

³³ Luke 7: 41 "A certain creditor had two debtors; one owed five hundred denarii, and the other fifty. 42 When they could not pay, he canceled the debts for both of them. Now which of them will love him more?" 43 Simon answered, "I suppose the one for whom he canceled the greater debt." And Jesus said to him, "You have judged rightly."

³⁴ 1 Timothy 5: "3 Show respect to widows who are really in need. 4 But if a widow has children or grandchildren, first let them learn to do their religious duty to their own family and thus repay some of the debt they owe their forebears, for this is what is acceptable in the sight of God."

³⁵ Matthew 18: "24 When he began the reckoning, one who owed him ten thousand talents was brought to him; 25 and, as he could not pay, his lord ordered him to be sold, together with his wife and children and all his possessions, and payment to be made. 26 So the slave fell on his knees before him, saying, "Have patience with me, and I will pay you everything.' 27 And out of pity for him, the lord of that slave released him and forgave him the debt. 28 But that same slave, as he went out, came upon one of his fellow slaves who owed him a hundred denarii; and seizing him by the throat, he said, "Pay what you owe.' 29 Then his fellow slave fell down and pleaded with him, "Have patience with me, and I will pay you.' 30 But he refused; then he went and threw him into prison until he would pay the debt. 31 When his fellow slaves saw what had happened, they were greatly distressed, and they went and reported to their lord all that had taken place. 32 Then his lord summoned him and said to him, "You wicked slave! I forgave you all that debt because you pleaded with me. 33 Should you not have had mercy on your fellow slave, as I had mercy on you?' 34 And in anger his lord handed him over to be tortured until he would pay his entire debt."

³⁶ Matthew 18: "15 "To one he gave five talents, to another, two, and to another, one, each according to his own ability; and he went on his journey. 16 "Immediately the one who had received the five talents went and traded with them, and gained five more talents. 17 "In the same manner the one who had received the two talents gained two more. 18 "But he who received the one talent went away, and dug a hole in the ground and hid his master's money. ... 24 "And the one also who had received the one talent came up and said, `Master, I knew you to be a hard man, reaping where you did not sow and gathering where you scattered no seed. 25 `And I was afraid, and went away and hid your talent in the ground. See, you have what is yours.' 26 "But his master answered and said to him, `You wicked, lazy slave, you knew that I reap where I did not sow and gather where I scattered no seed. 27 `Then you ought to have put my money in the bank, and on my arrival I would have received my money back with interest. 28

Without doubt, people today in every culture are influenced by strong feelings about debt, and since everyone possesses an intuitive grasp of money's origin as a kind of re-marketed interchangeable debt, those feelings must also influence how we view, accumulate, use or lose money.

Novel Uses of Money

Sumerian records show that about the same time high interest loans were catching on, some people got the idea of pooling resources in a partnership to fund a high risk venture, often a maritime trading expedition, with the expectation not of return in the form of fixed interest, but of a share in the profits of the venture. As with many new business ventures, expectations were often not met, and the practice fell out of favor. It would be revived later by the Romans to provide services to military expeditions, and Europeans to finance the trading companies formed for European expansion.

Still another novel use of money was to pay wages for labor. Traditionally people have organized themselves for work along lines of kinship, tribute or slavery. Instead of wages, dependents might receive "rations," kind of like a child receives an allowance. In the Hebrew story of Jacob and Rachel we have a situation in which Jacob for a month lives with and works for Laban in this capacity as a relative on rations. But then Laban inexplicably says, "Because you are my relative, should you therefore serve me for nothing? Tell me, what shall your wages be?" Still, in the vast majority of the rural world, wages were the exception until the decline of slavery in the 1800's, and were reserved mostly for dangerous jobs like mining, where one would prefer not to risk the affection of relatives or the capital of slaves. This expendability of wage earners is an interesting point to keep in mind if your life financial plan is based on wages.

A final novel use of money was to obscure its own meaning as a debt contract. Instead, money is viewed as the solution to debt. But the lender does not really create a loan when the lender makes money available to a debtor. The lender actually transfers debts he is owed to the debtor, who is expected to transfer them back with interest. The lender remains aware he must eventually, and perhaps unpleasantly, collect the debt. But the holder of the anonymous debt contract of money, with no specific repayment schedule, may easily forget its essential debt nature.

'Therefore take away the talent from him, and give it to the one who has the ten talents.' "

³⁷ Luke 6:35 "But love your enemies, and do good, and lend expecting nothing in return; and your reward will be great and you will be sons of the Most High; for He Himself is kind to ungrateful and evil men. "

He or she may even resent debt collectors or slave owners or land usurpers, and not wish to be like them.

Trust and Coercion

Debt is coercive. Assets can be confiscated, and for much of history people could be thrown in jail for debt. Reciprocal favors are usually not coercive, but are based on trust. They might be thought of as debt which is only repaid voluntarily. Since money is derived from reciprocal favors, it too is voluntary. Prices and exchange rates may vary, or a person from whom you want something may simply be unwilling to part with it, or with their time and labor, for any reasonable price. For money to have value, we must trust that someone is willing to make repayment on the debt it represents. The motto on our money might more appropriately be “*In Each Other We Trust.*”

Some societal functions are compulsory, for example taxes. Early governments confiscated part of the annual harvest, and conscripted soldiers for armies. If citizens are going to be allowed to more conveniently meet these obligations with money, then steps have to be taken to make the value of money less voluntary, and ensure that money paid in taxes will be able to induce someone to perform the services we collectively require, whether building roads or providing defense.

Where societies have wished to avoid compulsion, the solution that has evolved is a culture of “jobs.”

In a society which uses money, some people will become poor and feel like debtors whose surplus will be confiscated. In their experience it has been pointless to work hard. They will work only enough to meet immediate subsistence needs. Other people will work and save and eventually become rich, and will not need to work. So no one in this “free” society will feel compelled to do much work, neither the rich nor the poor.

But if a culture of jobs and a work ethic develop, certain benefits accrue only to those who have jobs. Retirement benefits are an example. Although the government provides a retirement program, Social Security, it is tied to jobs or at least to paying taxes as a self-employed person. Investors and the unemployed do not accrue any Social Security benefits.

Access to credit is another benefit of a job – every credit application form asks about job history and status as a primary criterion for granting credit. And of course, once you have credit you will have to keep your job so you can make the payments. Jobs become mandatory for most people. In fact it is difficult to fill out a credit application and explain that you are wealthy but unemployed.

Prior to adoption of the Affordable Care Act the most practical way to obtain healthcare was by having a job that provided it as a benefit.

Doctors and hospitals charge up to four times as much to the uninsured, so it's risky to simply do without. At the time of this writing some in the country would prefer to change or repeal this law, a debate beyond the scope of this book.

One further detail is needed to understand the jobs based culture. Money is "zero sum." To get some, you have to take an equal amount away from someone else. The sum of both sides of the transaction is zero. When we have a money based culture, we are constantly confronted with this zero sum nature of money.

In general, human transactions are not zero sum. When we engage in reciprocal favors, our focus tends to be on the positive sum. Your neighbor gets his fence, you get your chickens, both of you are better off. Your community grows stronger, and is better able to defend itself, or engage in competitive commerce.

But when we use money, even though the same thing could happen, what's most visible is the zero sum financial transaction. You could use the money from the fence to buy chickens. In this case the result would be the same. But you might not get the chickens from the same neighbor, and your relationship would not experience the same reinforcement. You also might foolishly squander the money in a gambling hall and have nothing to show for it. This would not be as likely in a reciprocal favor economy. Your neighbor might indulge you in a wager, and you might wind up fencing for him two days in a row. But when he saw you were not having time to tend your own place, and that without harvesting your crops he would likely wind up having to feed you, your neighbor would put a stop to it.

In a money based culture, where everything is for sale and people are not tied to their family plots of land, the neighbor might just decide to press his luck, take over your land, and evict you. In that case it could not be said you were both better off, or that the net social gain was greater than zero. It might well be less than zero. It might be negative.

Money is not only zero sum in transactions. It is even zero sum in creation. If more money is created than products, the money everyone has becomes worth a little less, and everyone gets a little poorer. This keeps the job culture going. Some people get richer and richer, making the rest of us poorer and poorer, so we cannot just quit our jobs when we have enough. We'd quickly fall behind. So we keep working even when we have enough.

Note carefully that I did not say simply *if more money is created* – only if more money is created than products are created. The creation of products behaves more like the exchange of favors. New wealth comes into existence. If the supply of money is not adjusted deflation can take hold. We'll look more into this later.

The Life of Money

The promise of a reciprocal favor does not have an indefinite life. In a few years, or even months, the memory of the fence help will grow dim in your neighbor's busy mind, and he will not think it worth so many chickens. Eventually he will move away or die and the favor will be worth nothing. If you are polite, you will waive it off if not collected promptly. There are exceptions when a critically important favor has a large effect on someone's life, but by and large I think it is as I have described.

Since money is derived from this reciprocal favor, it too has a limited life, more so because it is anonymous and loses identification with the original favor. To be sure, we have implemented confidence building measures to try and stabilize the value of money, but it is bound to erode with time. This is called inflation. It is a kind of natural inflation, progressing slowly, unlike the rapid inflation that results from product shortages or excess money creation. In fact money might be artificially engineered to behave differently than the underlying favors. The point here is that a certain slow inflation is a natural property of the underlying favors.

The idea of interest is opposed to inflation, and as we have seen, probably derives from agricultural surpluses. Subsistence economies which produce little surplus may have extensive systems of reciprocal favors, but do not have interest.

"Real interest" is the excess of interest over inflation. Oddly, during much of U.S. economic history real interest has been very low, close to zero, despite high growth.

Because interest was [probably] based on the natural growth of crops and animals, it normally has a relatively stable and predictable value. Church "tithes" are similar to interest. One might think of them as the interest the deity charges for use of land and nature. Many religious sources are divided between the evils of debt, insistence on debt relief, and the requirement for interest-like productivity in support of the church or society at large.

Equity profits, unlike interest, are unpredictable. Partnerships specify a percentage of the net return after expenses, rather than a percentage return on investment. We have seen they were developed to finance less predictable exploits, such as maritime trading, military adventures, and competitive enterprise.

So money has a finite life, which confidence measures attempt to lengthen, and which exploitation of agricultural surpluses and business risks attempt to defeat. The many anecdotes saying how wonderfully a person would have done to invest such and such an amount in a certain way long ago are just that, anecdotes. How many banks, mutual funds or

Dow 30 companies still exist from “long ago?” Not many. Most of the choices available 50, 75 or 100 years ago are out of business today.

Summary

Now you know what money is. Money has been made anonymous, compulsory and universal. Therefore giving from your supply is the same as issuing. Everyone in the society is responsible for performing services when called on to honor and maintain the value of the money. Recall my list of people whose picture is on the money? Each is there because of their contribution to ensuring the future value of American money.

Can you survive without money? There is no free land on which you can hunt or pitch your tent. You will have to pay someone rent. Collective social debt was created when money was issued, and you have the debt even if you have none of the issued money.

When you give money for any purpose you become more of a debtor than you were. The person who receives it becomes a lender, and negotiates to “collect” the debt when using the money.

Though initially money might represent a definite amount of labor, it comes to be worth only what others will give for it. And though the original deed may have been a personal and reciprocal favor exchange, once converted to money it becomes anonymous and interchangeable, quite convenient but losing its personal flavor.

How you use money depends on how you feel about money, and also how you feel about debt and the temple, big man, community, and the scarce material or trading commodity used to create and maintain confidence. If you are squeamish about collecting debts, you probably won't drive a very hard bargain when buying a car. If you have little faith in your government, you probably won't try very hard to accumulate the money it backs. If you don't have very much money, you may behave as a debtor and avoid accumulating more money because you feel it would only go to pay your debts. And if you have a lot of money, you likely have people working for you who behave as if they were in your debt.

Whether you have a lot or a little money, the way you use it reflects your unique personality and values. But money itself is anonymous. It doesn't have your name on it, and when you turn it over to a money manager or a corporation or a government for the promise of a return, one of two things will happen. Either it will be squandered, or it will be used to generate the promised return by any means necessary without regard to your personal values. The only measures applied to this transaction are risk and return. No other aspect of your personality survives the exchange.

You can avoid this, of course, by investing in your brother's business and helping him run it. Then you are likely to have some say in

matters. But by and large most investing is as anonymous as money. You don't know, and probably don't *want* to know, what tactics are used to achieve the returns. At one time if a company was using questionable tactics the shareholders might insist on change. But at the present most investors don't invest directly in companies. They invest in pension funds and mutual funds, which own 60% of the shares of corporations.

A mutual fund manager is not at liberty to decide to sacrifice returns in exchange for more ethical or prudent business practices. And so the owners of business, like money, are to a great degree anonymous, and sometimes businesses behave "as if" their only "value" were return on investment.

Money arises from reciprocal favors, which are granted anonymity for convenience of exchange, and supported with confidence building measures. This in turn gives rise to businesses whose purpose is to make reciprocal favors more efficient and extract value from them for investors. The degree to which these activities succeed in increasing the value and quality of human life and environment is as varied as humans themselves, with the pull of the dark anonymous side of money in constant tension with the cooperative reciprocation it represents.

One side effect of the anonymity of money and investing, and the lack of personal characteristics involved, is that it may become possible to mathematically analyze the behavior of money and investments using simplified assumptions. We turn our attention to this analysis in the next chapter.