Puzzles

Markets or Department Stores

Visiting China some years ago, I observed an interesting puzzle. If you are in a big building in the U.S. selling clothes or groceries, a department store or a supermarket, the people selling them to you are almost always employees of the firm that owns the building. In China, you are much more likely to be in a building whose owners rent it out in small pieces to a lot of individual sellers. Instead of a supermarket you have a large building with half a dozen butcher stalls, eight fish stalls, ... Instead of a department store, you have stalls selling different sorts of clothing, jewelry, electronics. I once saw a Chinese style food market in Baltimore and there are some supermarkets and department stores in China, but one form of retailing is the norm in China and the exception in the U.S., the other is the norm in the U.S., the exception in China.

One possible hint at a reason for the difference is the fact that a scaled up version of the Chinese pattern is common in the U.S. ; we call it a shopping mall. It is a building holding not stalls but stores. Some difference between the two societies makes the size of the firms sharing a common location larger, much larger, in the U.S.

On a visit to Brazil I came across another such puzzle. In Brazil, at least in Sao Paulo, restaurants frequently sell food not by the dish but by the kilo. You fill up your platter with whatever combination of salad, beans, meat, desert you want, they weigh it and charge you. I do not believe I have ever seen that pattern in a restaurant in the U.S., although it may exist. The closest I can think of is the cafeteria in my university which sells salad by weight, most other things by individual price.

There are advantages and disadvantages to that way of selling food. The puzzle is why it is common in one country, rare in another.

Internet in Hotels

Low and medium priced hotels or motels usually provide a free internet connection, high priced ones usually charge for it. This seems to be true not only in the U.S. but in Europe as well, although I am basing that conclusion on less data: one fancy hotel in Helsinki, one each less fancy in London and Paris. The obvious guess is that it has something to do with price discrimination, but why would it make more sense to price discriminate against internet users in expensive hotels than in inexpensive ones?

Why Charge for a Second Driver?

Some car rental companies charge for allowing two different people to drive the car. Why? Their cost is no higher if my wife and I take turns driving instead of her doing all of it, and the risk of accidents that damage their car would be less if we were free to have me drive when she is tired.

One possibility again is price discrimination; perhaps they think that if two people are going to drive the customers expect to use it more and so will pay a higher price. But given how competitive the market is price discrimination, which depends on some degree of monopoly, does not seem very plausible.

When I raised the question on my blog, one commenter suggested that many people ignore the driver restriction. Perhaps car companies are price discriminating against honest customers on the theory that the dishonest ones are lean and hungry types. Another wrote:

> I asked an executive for one of the major car rental companies to comment. He wrote "... drivers who are not related equals more risk, particularly re payment and return of the car."

That is the most plausible explanation I have seen; one cost I had not considered was the risk that a rental car would be stolen or the bill not paid. Two people planning to use the same car at different times would increase the risk that one of them did not plan to return it or that they would disagree about which was responsible for payment. That fits the fact that some companies waive the fee if the two drivers are a married couple.

Why did Airlines Start Charging for Bags and Meals?

Thirty years ago it was taken for granted that the price of your airline ticket covered checked luggage and, if the flight was sufficiently long, a meal. Today most airlines, with the exception of Southwest, charge for each checked bag. All airlines within the U.S., in my experience, charge for meals. Soft drinks and peanuts are still usually free, often other nibbles such as cookies as well.

Looking at it as an economist, charging for extras that cost the airline something to provide makes sense. Passengers who want a meal should be indifferent between the current fare with a free meal and a fare five dollars lower accompanied by a five dollar charge for eating; passengers to whom the meal is worth less than five dollars should prefer the latter arrangement. If providing the meal costs the airline five dollars, it too should be indifferent between the alternatives. So charging for a meal, or any other costly add-on, while adjusting fares accordingly, benefits some customers, hurts none, and costs the airline nothing.

Bag charges may be an exception. As my wife likes to point out, the result of charging for checked bags is that people bring more as carry-on, making it harder for everyone to board. Some small airlines solve that problem by charging for carry-on luggage as well but the majors, with one partial exception that I know of, do not.[1]

Charging for meals makes sense now. Not charging for them made sense forty years ago. Under airline regulation, the industry functioned as a cartel; an airline could not lower its price without CAB approval. That held fares well above their competitive level, making it in the interest of airlines to compete on non-price terms such as free meals.

If the airlines had switched to charging for meals and luggage in the late seventies or early eighties, shortly after deregulation, there would be no puzzle, but they didn't. As best I can determine by a quick google, the first airline to charge for checked luggate was American, in 2008. Airlines started dropping free meals earlier, about 2001, and started offering meals for sale a few years later.

One possible explanation for the disappearance of free meals might be 9/11, which occurred in 2001 and caused considerable financial problems for the airlines. But that was after deregulation,

[1] "When you purchase a Basic Economy ticket through United you're not allowed a full-size carry-on bag unless you're a MileagePlus Premier member." Reader's Digest, 7/21/21
[Make sure this is till true when the book is published]

so the airlines were free to raise or lower their fares. If meals cost the airline more than they were worth to their customers, why not abolish them earlier and lower prices accordingly? If not, then dropping the free meals was a less attractive alternative to raising fares, so why do it?

The closest I can come to an explanation of this puzzle requires me to replace the economic assumption of rational behavior with a form of predictable irrationality, the widespread belief in just prices, a subject I discuss in an old article linking economics to evolutionary psychology. Many people act as if they believe that they have a moral right to continued transactions on the terms they are used to having them in the past, that a seller who raises his prices is trying to cheat them. It is not an unqualified belief, since evidence that the seller's cost has increased may sometimes rebut it, but it is at least a presumption. One way of acting on it is to avoid doing business with sellers who offer you the same transaction at the same price for a period of years, then suddenly raise the price or reduce what they are giving you in exchange.

For instance, airlines that stop providing you with free meals.

Of course, airline prices change all the time. But airline prices also vary according to where you are flying, when you are flying, and how long in advance you bought your ticket, a pattern complicated enough so that the average passenger cannot easily keep track of whether the airline is offering the same fares this year as last. He can notice if the airline stops offering free meals or starts charging for checked luggage and resent it. If this analysis is correct, an airline that stopped offering meals with no obvious reason would suffer a reputational loss. Customers would decide that that airline was trying to exploit them and avoid it when possible. 9/11 offered an excuse.

I do not know what set off the later switch to bag charges but it may be significant that, within a fairly short period of time, most airlines were doing it, perhaps because the later ones had the practice of the earlier movers to justify their charges. And it may be significant that South-western, a very successful firm, continues to carry bags for free and makes a large point of that fact in their advertising.

This is a partial, explanation of what happened, but not a very convincing one.

Travel Expenses and Price Discrimination

When I give talks for the Federalist Society I have to send them documentation for expenses: a motel, often a rental car, sometimes airport parking. Why is that particular arrangement, a fixed payment plus expenses, so common.?

The argument against it is that paying me a fixed sum instead would make it in my interest to minimize expenses, find an inexpensive motel, shop around online for the best available car rental deal. There are limits to how expensive a trip I could get away with charging them for, but it is much easier for me to monitor myself, make sure I am getting the best available deal, than it is for them to monitor me.

One argument against a lump sum contract is that it gives the recipient an incentive to reduce costs not only by careful shopping but also by producing a lower quality product, using low quality construction materials to build a house, for instance. Similarly, someone flying me to Europe to give a talk may be reasonably concerned that a lump sum payment instead of an honorarium plus expenses will result in my getting a cheap tourist class flight, perhaps even a red-eye. Buying me a business class ticket instead—a pleasant luxury, but one I have never purchased with my own money—may result in a more rested speaker and a better talk.

It is hard to see how that applies here. The inexpensive motels I usually stay at — I approve of the Federalist Society and am willing to make some effort to save them money even without any financial incentive to do so — give me as good a night's sleep as a more expensive motel or hotel would have. The rental cars I locate via Carrentals.com get me from the airport to my talk and back with no difficulty. So why is an honorarium plus expenses the usual arrangement for speaking fees?

For one possible answer, imagine that the Federalist Society wants me to give two talks, one at Stanford and one at Harvard. I live in San Jose, so a lump sum payment sufficient to get me to Cambridge will have to not only buy my time but also pay the cost of a trip across the country. That is considerably more than they need to get me to give a talk at Stanford, which is about a half hour drive from my house. By instead offering a fixed honorarium plus expenses they get what they pay closer to the minimum amount they have to offer me to get me to give each talk.

They are, in other words, engaging in price discrimination — by a buyer not, as in the usual textbook examples, a seller. They could do the same thing by offering a lump sum that varied according to some estimate of transport costs, thus retaining the advantage of giving me an incentive to hold down expenses; perhaps I should suggest it to them. But if transport costs vary a good deal by where you are going, when you are going, how far in advance you buy your ticket and the like, their method may be easier. They do pay only half as much for a talk within 45 minutes of where the speaker lives.

Why Do Gangs Specialize in Crime?

Looking over a review of *Freakanomics* — I have not read the book — I noticed the plausible claim that inner city gangs are not all that different from other businesses. That suggests an interesting question: Is there a reason why they have to limit themselves to crime? Gangs presumably have comparative advantage in illegal activities since they have a structure that does not depend on using courts to enforce contracts and the like, so if there are sufficient opportunities in illegal markets it is not surprising that they exploit them. But suppose the illegal market vanishes. Suppose we legalize drugs, prostitution, and gambling, as some of us think we should. What then?

One possibility is that gangs can only compete in illegal activities so, deprived of their current revenue sources, will turn to extortion and robbery. Another is that they are a form of social organization that works well at employing resources, inner city youths, that ordinary firms can make little use of. If so, there is no obvious reason why they cannot use them for legal as well as illegal activities.

Why Only New Toys?

From time to time I encounter requests for toys, sometimes also books, to be given away, presumably to children whose parents are poor. The request is put in terms of new toys, sometimes specifically unopened new toys.

Since our children are now adults, we have a lot of used toys and books lying around; my guess is that the purchase price of all of them would add up to several thousand dollars. We have given a few to grandchildren, would be happy to pass on most of the rest to other children, but are quite unlikely to spend several thousand dollars buying new toys to give away to strangers.

There must be a lot of people in our situation, so a request for donated toys should get a lot more without the requirement that they be new. That leaves me wondering why that requirement exists. Is the assumption that the recipients, or their parents, unlike my grandchildren, are too proud to accept used toys? Is there some legal restriction, justified on grounds of safety or prevention of contagion and actually due to pressure by toy companies who want to sell more toys?[2] Or is there some good reason that I am missing?

One commenter wrote:

> Even rich people don't give each other used things. It's more appropriate to give a new tie than a used iPad, even if the iPad is worth ten times as much.
>
> I don't know the reasons for the social norm ... maybe used looks like you just didn't need it any more? Or maybe it looks cheap, like, why not buy a new one instead? Dunno.

Which ties into the discussion of gift giving in Chapter XXX [Gifts].

Athenian Puzzles

The ancient Athenians had a straightforward approach to the problem of funding government expenditures. If you were one of the richest Athenians, every other year you had to pay for something, sponsor Athens' team at the Olympics, pay all (later part) of the cost of one of the triremes in the Athenian fleet, or the like.

If you were selected for such a task, called a liturgy, there were two ways of getting out of it. One was to show that you had already been assigned a liturgy for this year or had done one in the previous year. The other was to show that there was another Athenian, richer than you, who had not been assigned a liturgy either this year or last and should therefore do yours.

In a society without an IRS, without accounting, without modern banking and financial records, how do you prove that another Athenian is richer than you are?

I will give one hint to the answer: It was obviously invented not by an accountant but by an economist. Possibly a mad economist.

If you think you have the answer, or give up, here [3]it is.

Here is another Athenian puzzle. If I found that you had goods that had been stolen from me I not only recovered the goods, I also got an additional payment from you of their value. That created an obvious opportunity — search your house, plant goods of mine, find them, and collect a fine. How did the Athenians keep that from happening?

The equivalent problem in our system is keeping police officers from planting evidence, such as illegal drugs, on someone they want an excuse to arrest. Implementing the Athenian solution[4] would be interesting.

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[2] A *Reason* story that might be interpreted that way.

[3] I offer to exchange everything I own for everything you own. If you refuse, you have admitted that you are wealthier than I am, so you get to do the liturgy.[find a way of hiding this and the next in the print copy]

[4] I can search your house, but I have to do it naked. Possibly in my underwear.

Are Children Giffen Goods?

Suppose someone invents an inexpensive and reliable way in which parents can choose the gender of their offspring. From the economic standpoint, this represents an increase in quality at no significant increase in cost, since you now get a child of your preferred gender instead of a fifty-fifty chance. Increased quality at constant cost corresponds to decreased cost at constant quality; you are now getting more for your money. Lowering the cost of something increases the quantity demanded.

Do you conclude that, as a result of the new invention, the birth rate goes up? If not, why not? Are children Giffen goods?

The Other Hockey Stick

Dierdre' McCloskey's Bourgeois Dignity offers three central theses:

1. The graph of real per capita income over history is a hockey stick. For thousands of years, the overwhelming bulk of the world's population lived at a real income equivalent to about three dollars a day. Over the past two centuries, that increased roughly ten-fold averaged over the world population, twenty or thirty-fold for developed countries, probably by a good deal more if one allows for improvements in the quality of what was available to buy: electric lighting over candles, air conditioning over house fans.

And the average continues to rise.

2. Material explanations of economic growth offered by economists with approaches ranging from Marx to the Chicago School cannot explain the size and speed of the change.

3. The correct explanation is a change in attitude, the shift, first in North-west Europe and then increasingly in the rest of the world, from regarding "bourgeois" activities, trade, manufacturing, money making, as low status to regarding them as dignified and worthy of respect.

It is an interesting thesis. The first part, so far as I can tell, is correct; we really are enormously better off than our ancestors. I am skeptical about the second part, not because I know what the right explanation is but because proving a negative is hard. Also, while the increase in material well being over two centuries is indeed enormous, it represents the cumulative effect of an average increase of less than two percent a year, which looks less startling and so easier to offer possible explanations for.

As for the third part, McCloskey is describing a real and important change in attitudes, at least in Europe. Rich people no longer feel obliged to apologize for the fact that they made their money in trade instead of inheriting it. We no longer take it for granted that, having made a fortune in business, the only respectable thing to do with it is to purchase land in order to buy your way into the landed elite.

I am not sure, however, how well that describes the entire world prior to the 18th century — Islamic society seems for a long time to have considered merchants respectable, perhaps because the Prophet was a merchant. Nor do I know how much responsibility that change has for economic growth in Europe.

I am struck, however, by a puzzle that McCloskey does not discuss in any detail, the long handle of the hockey stick. If, as she claims, real incomes were roughly constant for thousands of years, there must have been something keeping them that way, an equilibrating process that pushed incomes back down if some exogenous factor such as improving climate or the availability of new food crops was increasing it and back up if some exogenous factor pushed it down.

The most plausible candidate for such a process was offered more than two hundred years ago by Thomas Malthus. His argument was not, as modern references sometimes imply, that population growth leads to catastrophe. It was rather that population growth made impossible any large sustained increase in the standard of living of the masses. The argument was simple and persuasive — and its conclusion strikingly inconsistent with what actually happened over the next two hundred years.

Malthus started with the observation that humans like sex and sex produces babies. He concluded that, unless there were large costs to producing babies, population would increase at something close to the biological maximum, leading to an exponential growth rate high enough to overcome any plausible rate of increase in human productivity. Looking around him, he observed that most people were poor enough so that the cost of supporting an additional child was a substantial burden, with the result that men, outside the upper class, generally married late. He concluded that if that was not the case, if as Godwin and Condorcet, the authors he was responding to, expected, the future saw a sharp rise in the standard of living of the masses, making additional children only a minor burden to their parents, population would increase rapidly and the pressure of population against a fixed supply of land would push standards of living back down. His conclusion was that the least unattractive option was a world where moral restraint, mostly in the form of late marriage, kept population growth rates low enough to be accommodated by increasing production.[5] The alternative was for population to be held down by some combination of famine, plague and warfare.

It is an elegant argument and provides a plausible explanation for most of human history, but one that stopped working within the lifetime of its author. Why? What went wrong with Malthus' model?

The answer cannot be simply that output increased and kept increasing, fast enough to outweigh population growth, because if that had happened population would eventually have been growing at something close to the biological maximum, which Malthus estimated, on the basis of data on population growth in the English North American colonies, to give a doubling time of about twenty-five years. Although population in England during the 19th and 20th centuries did indeed increase, it did not increase nearly that fast.

One possibility, the one I think most plausible, is that Malthus overestimated the cost to parents of limiting the number of their children. Implicit in his argument is the assumption that the only practical alternatives are having babies and not having sex — he is curiously silent on the subject of contraception, aside from a few brief negative mentions:

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[5] Not surprisingly, Malthus seriously underestimated the potential for increased production, writing: "On the possibility of increasing very considerably the effective population of this country, I have expressed myself in some parts of my work more sanguinely, perhaps, than experience would warrant. I have said, that in the course of some centuries it might contain two or three times as many inhabitants as at present and yet every person be both better fed and better clothed." (second essay, 1807)

In less than two centuries population increased almost six-fold, along with an enormous increase in per capita real income.

> "Promiscuous intercourse, unnatural passions, violations of the marriage bed, *and improper arts to conceal the consequences of irregular connexions*, are preventive checks that clearly come under the head of vice."

> "I have never adverted to the check suggested by Condorcet without the most marked disapprobation.[6] Indeed I should always particularly reprobate any artificial and unnatural modes of checking population, both on account of their immorality and their tendency to remove a necessary stimulus to industry."

While modern contraceptive technology appeared too late to explain the first century or so of economic growth, contraception itself is a very old technology in at least two forms.[7] *Coitus Interruptus*, intercourse with withdrawal just before orgasm, is mentioned in the bible, discussed in medieval Islamic law, pretty clearly a known option for at least the past two thousand years and more. The rhythm method, refraining from intercourse during the woman's fertile period, is a second low tech alternative, also referred to in classical antiquity, although it is less clear how far back the knowledge necessary to use it successfully goes. And, of course, there are the various forms of non-vaginal intercourse — possibly Malthus' "unnatural passions" and "violations of the marriage bed."

Critics of the Catholic church's stand on contraception sometimes blame it for large family sizes in poor Catholic countries. I concluded long ago that they were probably wrong. Rhythm is not as reliable a form of contraception as the pill, diaphragm, or IUD, but if the objective is only to have four children instead of eight it does not have to be all that reliable. A mildly cynical defender of the Catholic doctrine might argue that it bans forms of contraception sufficiently reliable to make sinning, non-marital intercourse, safe, while permitting a form reliable enough to substantially reduce population growth.

That raises the question of how effective pre-modern forms of contraception are. The rhythm method, correctly used, is claimed to have a failure rate of only 9%, meaning an average of one pregnancy every eleven years. How many couples knew how to do it how early in history is unclear. There are references to the idea of abstaining from intercourse during the woman's fertile period back in classical antiquity, but some of them get the relevant timing wrong; modern understanding of it only dates from the 1920's. One online source I found on *coitus interruptus* estimates a failure rate of 22%. That would result in a woman producing about five children in her lifetime — less if she does not start regular intercourse until some years after she becomes fertile. Given pre-modern rates of infant and child mortality, that, applying to all women, would give a population growth rate of about 25%/generation, perhaps 1%/year. Some women never married or died before the end of their childbearing years, some men and women were infertile, so *interruptus* alone, if practiced by all couples, could probably have prevented population growth, which suggests that a central assumption of Malthus' argument, the high cost of holding birth rates down, is wrong. That would explain why his prediction failed to hold through the 19th and 20th

[6] "He then proceeds to remove the difficulty of over-population in a manner, which I profess not to understand. Having observed, that the ridiculous prejudices of superstition would by that time have ceased to throw over morals a corrupt and degrading austerity he alludes, either to a promiscuous concubinage, which would prevent breeding or to something else as unnatural. To remove the difficulty in this way, will, surely, in the opinion of most men, be, to destroy that virtue and purity of manners, which the advocates of equality, and of the perfectibility of man, profess to be the end and object of their views." (Malthus on Condorcet)

[7] Condoms existed at least as early as the 16th century but seem to have been a luxury good until the invention of vulcanized rubber made them cheap.

century but leaves us without an explanation of why it worked pretty well for millennia before that.

I am not the first person to be look for an explanation of the pattern of per capita income over time. One source reports “Where the typical American mother bore 7 children in 1800, the average number of children had fallen to three-and-a-half in 1900” and attributes the decline primarily to early term abortions.[8] Historian Jacqueline Hecht attributes the reduction in the French birthrate largely to *coitus interruptus* within marriage or actual abstinence.[9] What changed, according to both sources, was not the knowledge of how to restrict childbirth but the desire to do it.

If those arguments are correct, it suggests that, through most of history, most couples chose not to hold down the number of children, which raises the question of why that changed. According to Hecht, elite opinion in the eighteenth century held that more population was an unambiguous good — more taxes for the crown, more men for the army — and one that conformed to the religious injunction to be fruitful and multiply. Lacking the idea of diminishing returns in agriculture, the belief was that any increase in population would support itself by increased production. It was believed, mistakenly, that population was declining; clerical celibacy and other forms of non-marriage were seen as a problem. At some point after the French Revolution elite opinion shifted, due in part to a philosophical shift in favor of something closer to a utilitarian view, the objective not the wealth and power of the nation but the happiness of its population. Seen from that standpoint, high birth rates were the problem, not the solution, since they made families poorer. Contraception, long known but generally disapproved of, began to be seen, most notably by Condorcet, as one way of holding birth rates down. To what extent a philosophical shift by the elite can be the explanation of changed behavior by the masses is not clear.

A second possibility is suggested by a modification of the Malthusian argument introduced by Malthus’ friend David Ricardo, arguably the first great economic theorist. He argued that what level of income corresponded to the Malthusian population equilibrium depended on the tastes of the masses. The more luxurious the tastes of the working class, the higher the income level at which the cost of an additional child was no longer an adequate incentive to hold down the birth rate. Hence he concluded that the friends of mankind should wish that the workers have more luxurious tastes. Following out that argument, one might explain the rise of incomes over the past two centuries as a result of increases in the level of income that ordinary people considered acceptable. That would be a non-material explanation, although not the same as the one that McCloskey offers.

Both of these explain the past two centuries at the cost of failing to explain all of previous history. Why did the view that additional children were a blessing and not a curse hold steady across a long time and a wide range of societies? Standards of living have gone up and down at various points

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[8] “By 1860, according to one estimate, 20 percent of pregnancies were terminated by abortion, compared to 30 percent today.”

[9] “The great turning point in the history of French population was taken in the years 1794-98, as the old contraceptive weapons, belated marriage, or definitive celibacy gave way to the more "modern" method — coitus interruptus.” “From ‘Be Fruitful and Multiply’ to Family Planning: The Enlightenment Transition,” Jacqueline Hecht, *Eighteenth-Century Studies*, Vol. 32, No. 4, Sites and Margins of the Public Sphere (Summer, 1999), pp. 536-551.

in the past. Why did not each increase result in a rise in expectations, ratcheting up the level of the Malthusian equilibrium?

That brings me to a final possibility that I think is consistent with at least the most obvious data. One of the assumptions that went into the Malthusian argument was the high cost of holding down birth rates. The other was the economic importance of land. Suppose we weaken the former assumption, for the reasons I have already suggested, and drop the latter.

Consider an economy in which land is a very important input, making per capita output very sensitive to population density. In such an economy, even a weak version of Malthus' theory is sufficient to produce the Malthusian conclusion. If real incomes go up substantially population grows, even if at nothing like the biological maximum, and even a modest population growth is sufficient to push incomes back down.

Now introduce one change—technological progress that makes labor rather than land the key input. The logic of the situation is the same as before, but the magnitudes have changed. Rising income produces an increase in the birth rate, hence in population, but that exerts only a modest downward pressure on incomes, one that can be outweighed by technological improvement, better property rights, increased foreign trade, or any of a variety of other positive factors.

Forty some years ago, when population played the same role in public discourse that global warming now does, the looming catastrophe that could perhaps be prevented if only we took sufficiently strong measures against it, I did a simple calculation designed to test the popular assumption that the reason poor countries were poor was overpopulation. I calculated population density across countries and found the five most densely populated. Two were rich developed countries, Belgium and the Netherlands. Three were rapidly developing countries, Taiwan, South Korea, and Singapore. Hong Kong had about ten times the population density of Singapore, the most densely populated of the five, but was not included because it was not an independent country. I concluded that population density was probably not nearly as important a factor as generally supposed.

The reason, most spectacularly illustrated by the later history of Hong Kong, was that land in a modern economy is not all that important an input. I do not know enough economic history to say with any confidence just when the shift from land to labor as the critical bottleneck to production occurred, but it provides a possible explanation of the puzzle of McCloskey's hockey stick, an explanation of both the long handle and the short, and steeply rising, blade.

So far I have considered only negative effects of increased population — large in the pre-Malthusian world, small in the post-Malthusian. One should also consider positive effects of population density. A denser population increases the opportunities for specialization and economies of scale. It increases the number of people creating productive innovation, intellectual property broadly defined. Looking at the modern world, it is hard to see much evidence that population density has, on net, a net negative effect. A few sparsely populated countries get substantial income from their natural resources, but most rich countries are densely populated and the obvious exception, the U.S., does not derive a very large fraction of its income from agriculture, the most obviously land-intensive industry.

That suggests a final step in my argument. Changes were occurring which lowered the importance of land in production. As long as income remained sufficiently sensitive to population density for the Malthusian mechanism to work, the change slowed the speed with which higher incomes were eliminated by the resulting population growth but did not change the equilibrium level of income. When the negative effects of population growth became small enough to be at least balanced by the positive effects, the system hit a tipping point, since there was now no equilibrating mechanism holding incomes down.

This answer assumes that the feedback mechanism went through pressure of population on land, as per Malthus. Are there other interesting alternatives?

One is predation. Primitive societies have small governments because they cannot afford large ones — if a significant part of the population is in the business of living off others instead of producing, everyone starves. Perhaps what maintained the equilibrium was that, as soon as incomes got large enough to support a predatory state, such a state came into existence. To put it in less abrupt terms, whenever increased incomes allowed the state to grow, it grew. Its consumption then pushed average incomes back down.

That story appeals to my libertarian prejudices but, unlike my first suggestion, it does not offer an obvious explanation of what eventually turned off the mechanism. Perhaps the answer is some variant of McCloskey's. Beliefs changed, rhetoric changed, social norms changed, in a way that made predation a less viable strategy than it had been before.

It is worth looking for other mechanisms that could have held real incomes at an equilibrium level for a very long time, then stopped working. Any solution must explain not only my two points above, but also a third: The fact that, whatever the cause, it was contagious. Technology could explain that, as one society imitated another. So, perhaps, could ideology—economic success makes good advertising.

The Equity Premium Puzzle: A Suggested Solution

Most investors are free to invest in either stocks or bonds, so one would expect the return of both investments to be similar. It is an obvious argument, at least to an economist, but the conclusion does not appear to be true. In the U.S. over the past century, stocks have consistently outperformed bonds. This is the Equity Premium Puzzle.

A variety of explanations have been offered. The most obvious is that the return of stocks, both individual stocks and stock portfolios, is more uncertain than the return of bonds, at least over the short run, so risk averse investors would be willing to accept a lower return on bonds in exchange for lower risk. Attempts to estimate how risk averse investors would have to be to explain the observed premium, however, produce implausible answers:

> To quantify the level of risk aversion implied if these figures represented the *expected* outperformance of equities over bonds, investors would prefer a certain payoff of $51,300 to a 50/50 bet paying either $50,000 or $100,000.[10]

A variety of other explanations have been offered but none appears to be generally accepted.

I have another one.

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[10] Mankiw, N. Gregory; Zeldes, Stephen P. (1991). "The Consumption of Stockholders and Nonstockholders". Journal of Financial Economics. 29 (1): 97–112.

Imagine a market where many investors are insider traders on a small scale, in an economic but not necessarily a legal sense. I know more than the market about the firm I work for. You know more than the market about a firm you have repeatedly had dealings with. He knows more than the market about a technology he has worked with extensively that will affect the performance of several firms.

Each person invests some of his money where he has an edge, buys a stock that is going to go up or sells short one that is going to go down. By the standard analysis of insider trading, he makes an above market return. Because he is risk averse he wants to diversify his investment, so part of his money goes into other investments. His marginal return is the return he can get without inside knowledge, his average return is a suitably weighted average of that and his insider return. Bond investments only have to do as well as his marginal investments, so the return on bonds is lower than the average return on stocks.

When I first came up with the idea, someone I described it to offered a proof that it could not be true, one that at the time seemed convincing. My argument implies that everyone, the investor without inside knowledge and the investor with inside knowledge making marginal investments, is getting less than the average return. Why can't he buy a random collection of stocks, in the limit a millionth of a percent of the stock of every company, and so guarantee himself the average return?

That proves too much, only that my explanation of the equity premium puzzle is inconsistent with rational behavior by investors but also that an insider cannot profit by his inside knowledge: If some insiders are getting an above average return, everyone else must be getting, on average, a below average return, and anyone who is could get an average return by buying stock at random.

The solution to the paradox is that it is not possible for every uninformed investor to end up with an equal share of every company on the market because some of those shares, the shares of companies particularly likely to go up, belong to insiders. That explains both how it is possible for insiders to make an above average return and why my explanation of the Equity Premium Puzzle is not inconsistent with investor rationality.

Whether it is the correct explanation, of course, I do not know.