האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

ECONOMICS AND COMMON SENSE

A review of Steven E. Landsburg's book
More Sex is Safer Sex, the Unconventional Wisdom of Economics

by

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Discussion Paper # 485 May 2008

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Economics and Common Sense

Reviewed by Gil Kalai

More Sex is Safer Sex:
The Unconventional Wisdom of Economics
Steven E. Landsburg
Free Press, 2007
US$26.00, 288 pages
ISBN-13:978-1-4165-3222-4

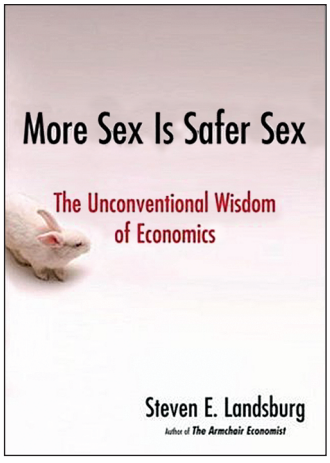
The surprise 2005 bestseller *Freakonomics* by Steven Levitt and Stephen Dubner launched a small genre of books by economists applying economic reasoning to everyday life and finding counter-intuitive results. Mathematician and economist Steven Landsburg, whose online *Slate* column "Everyday Economics" predates the Levitt and Dubner volume, has now collected and expanded some of those columns to form the basis of his new book.

The Logic of Economics

An old Jewish joke [1] goes as follows: "Why is it that rich people have open credit lines and poor people need to pay cash? The world would have been a much better place if the opposite was true." "You can argue," the joke continues, "that giving credit to poor people runs the risk of making the creditor himself poor. But this is all for the better, once the creditor is poor he will also have an open credit line!"

Common Sense, the Flat Earth, and a Little Riddle

In his book, Landsburg uses the "weapons of evidence and logic, especially the logic of economics"



to draw surprising conclusions that run against common sense. "If your common sense tells you otherwise," says Landsburg, "remember that common sense also tells you the Earth is flat."

Drawing on this bold statement, here is a small riddle (I shall come back to its relevance at the end):

You sail 300 kilometers from point A to B and then in a perpendicular direction 400 kilometers from point B to C. What is the sailing distance from A to C? Choose the best answer.

a) 500 kilometers
b) 499.99 kilometers
c) 490 kilometers
d) 450 kilometers

Is More Sex Safer?

Let us start with the first example that gives the book its name. Common sense tells us that promiscuity spreads AIDS. Landsburg, relying on a paper by Harvard economist Michael Kremer, argues otherwise. Before presenting Landsburg's claim, let's clarify what he does not claim. Landsburg agrees that for every individual in the society, having more sex is less safe. (Landsburg also agrees that practicing safe sex is safer than not taking safety measures.) Yet he argues that if sexual conservatives relax their standards, sex will be overall safer. "Michael Kremer estimates that the spread of AIDS in England could plausibly be retarded if everyone with fewer than about 2.25 partners per year were to take additional partners more frequently." We

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The author would like to thank Robert J. Aumann, Allyn Jackson, Anat Lotan, Andy Magid, Ariel Rubenstein, and Edna Ullmann-Margalit for helpful comments and suggestions.

Landsburg says that "Resistance to logic frequently reveals itself as animosity towards mathematics"

can imagine a mathematical stochastic model behind this claim: men and women are represented by vertices in a bipartite graph, which is used to describe the spread of the epidemic. A sexual relation is described by an edge, and the main conclusion will roughly be based on the following observation. If we fix the number of edges (sexual encounters), then the epidemic will spread more rapidly when the variance in the degrees of the vertices is larger. (There is not much more about sex, neither in this model nor in Landsburg's book as a whole.)

Is this argument convincing? Does it represent a solid contribution of economic theory (and even of mathematics) to the area of medicine? Should it be translated into practical social recommendations? I was not convinced. But I will let you read the book, or better yet, Kremer's original paper [2], and make your own judgment. To be sure, this is provocative and quite interesting.

The Unique Charity Recommendation

People tend to diversify their charity contributions, but unless you are very rich and make significant contributions, this runs against Landsburg's logic of economics.

"Economists," writes Landsburg in chapter 12 "are traditionally humble enough to restrict themselves to pure description." But Landsburg sticks his neck out to make a definite recommendation: "If you are trying to be charitable, then you *ought* to target a single charity instead of diversifying your contributions" [italics in original].

The rationale in this case is very simple. You should give all your charity dollars to the charity organization for which your first charity dollar gives the most mileage. This is a rare case in which Landsburg actually describes the mathematics. He also explains why issues regarding risk, which are relevant to diversifying your investments, are irrelevant in this case of charity. To make it clear: Landsburg does not just advocate giving your charity donations to a few organizations. He advocates giving all donations to a *single* charity organization.

A serious difficulty I see with Landsburg's advice is that if people adopt his recommendation, charity organizations will have stronger incentives to invest more in public relations and salesmanship. This may increase the overhead and reduce the amount of money available to support actual charitable works.

It also stands to reason that on average, people who follow the single charity recommendation will eventually give less to charity.

The Separation of Business from Charity and Moses Maimonides

Landsburg starts this interesting chapter 12 by dismissing as "stupid" the view he attributes to the famous Jewish philosopher of the Middle Ages, Moses Maimonides, that a high form of charity is where the person who gives charity and the person who receives it do not know about each other. As a matter of fact, while this form of charity is indeed high on the list of Maimonides (who followed earlier teachings from the Talmud), it is only second to the highest form of charity, which has a strong ingredient of "mixing charity with business". "Give him a gift or a loan, make him a partner, arrange for him a job, hold and strengthen him so he will not need more charity" wrote Moses Maimonides about charity [3]. Landsburg and other economists give a clear teaching to the contrary: "Do not mix business with charity." To quote Landsburg, "you hire a tailor to make your clothes, you hire a carpenter to fix your roof, and, if you are a stockholder, you hire executives to run your company. Your tailor, your carpenter, and your executives might be very good at what they do, but it does not follow that they'd also be good at figuring out how to give away your money." A common economic teaching is: run your business strictly for the purpose of maximizing revenues for yourself (or for the stockholders), and if you want to give charity do it separately; such a separation is more "efficient", some economists tell you, while others strongly disagree.

Where do I stand in this debate? I think that a strict separation between charity (and other moral values) and business has a cost. Trying to understand this cost and putting it back to the economic equations may demonstrate that Maimonides' teaching on this matter had some wisdom after all.

The Role of Reason and Mathematics

The same chapter 12 ends with a lovely defense of the application of pure reason and mathematical modeling to social issues. I heartily recommend reading it.

Landsburg says that "Resistance to logic frequently reveals itself as animosity toward mathematics" and mentions readers who claim that "no mathematically expressible argument can ever be relevant to a moral dilemma." Landsburg disagrees, and I agree with him. The major role

of mathematics and statistics in economics and other social sciences is a twentieth century development. Economist Herbert Scarf described to me the unique role of the Cowles Foundation at Yale University in bringing about the dominance of mathematical and statistical methods in economics. (He "complained", though, that the success of this revolution has made Cowles a less unique place than it used to be.)

But mathematicians can be just as skeptical about applications of mathematics to social sciences as those with animosity towards mathematics. One difficulty in the interpretation of mathematical modeling and results is that often they run much beyond the scope of the original mathematical setting. As mathematician Wolfgang Dahmen often argues, the most important thing to remember regarding the application of mathematics is the sentence: "If *if* then *then*." The conclusions of a mathematical theorem go only as far as its conditions allow. Right? Well, in most areas where mathematics is applied the interpretations go well beyond what mathematics allows. This accounts for the many successes in applications of mathematics and mathematical formalism, and for quite a few failures, as well.

Mathematical formalism is useful not only to support good ideas but also to shoot down bad ideas as meaningless or incorrect. Many of the new claims and suggestions in Landsburg's book represent his insights based on "the logic of economics" but not a careful formal analysis.

Probability, Bayes' Law, AIDS, Jurors, and Abe Lincoln

"Here is a test of your ability to assess evidence: You've just had an HIV test. The bad news is that according to the test, you are infected. The good news is that the test is wrong 5 percent of the time. So there is 5 percent chance you're okay, right?"

"Wrong" says Landsburg. "There is more like an 84 percent chance you're okay." This is based on Bayes' law: "most people—say 99 percent of your demographic group—are uninfected." Taking it as your prior probability to be infected and applying Bayes' law, we get the 84 percent chance.

Is Landsburg right? Well, not quite. It depends. The people who take HIV tests are not a random sample of their demographic group. So, probably more than 16 percent of the people of your demographic group who are actually tested and found infected are indeed infected. But Landsburg is absolutely right about the importance of weighing evidence and of Bayes' rule. Chapter 7 gives a beautiful description of Bayesian thought. Indeed this is one of the most important and beautiful connections between mathematical thinking and science and philosophy.

In this chapter Landsburg advocates a change in the judicial system that will allow jurors to receive and weigh all information, including prior criminal records of the defendant, the track records of the lawyers, the opinion of the press, etc. He argues that a Bayesian process based on all available information will yield optimal results. One can be skeptical about this advice and argue that the "noise sensitivity" of a complicated Bayesian process will make the outcomes meaningless.

We should take economists' advice seriously but be aware of errors and even certain systematic biases.

Landsburg gives a quotation by Abraham Lincoln that we mathematicians would appreciate (but that runs contrary to Landsburg's own approach for taking all information into account). Lincoln used an example from mathematics to demonstrate the issue of relevant information: "Euclid proves that all the angles in a triangle are equal to two right angles. Euclid has shown how to work it out. Now, if you undertake to disprove this proposition, and to show it is erroneous, would you prove it to be false by calling Euclid a liar?"

Causality, Correlations, Shopping Carts, and Daughters

Correlation and causality are of great importance everywhere and also in economics. In chapter 10 Landsburg presents evidence that daughters cause divorce. An American with one daughter is 5 percent more likely to divorce than an American with one son. The gap is even larger in other countries. Economists Dahl and Moretti gathered data and offered some explanations. The chapter very nicely explains what correlation means and tries to examine quite carefully whether this correlation manifests causality and what the reason behind it is. Various possible explanations for this correlation are examined and rejected. Dahl and Moretti's explanation is that marriages with daughters are more vulnerable because parents prefer boys or, more precisely, because there is a systematic bias for preferring boys among parents.

In chapter 9 Landsburg tries to find the cause of the growing size of shopping carts in American supermarkets. Ralph Nader pointed to this phenomenon as an example of how consumers are manipulated and, according to Landsburg, the

question "Explain why Mr. Nader can't be right" is a standard exam question in the economics department at the University of Chicago. Landsburg discusses many possible explanations. Quite a few (including Nader's) are rejected because, according to Landsburg, they explain only why the carts are big and not why they are *getting bigger*. (What makes matters even more complicated is that there can be multiple reasons that influence the phenomenon of big shopping carts that are gradually getting bigger.)

Children at Work and Dr. David Livingstone

The point of the Jewish joke we started with, that the logic of economics does not always tie in with naive notions of "fairness", is one of the insights that is repeated in Landsburg's book. This is clearly the case in his chapter 5 on child labor. Landsburg attacks those who protest against third-world child labor and who try to protect the children by limiting the number of hours they can work and by improving their working conditions. Dr. David Livingstone, Landsburg presumes, would not support such protests in spite of genuinely caring about the welfare of Africans, because his own medical education was financed by his childhood labor. I find Landsburg's logic and rhetoric in this matter hard to swallow.

More Guns Less Crime? Incentives, Life, Death, and Morals

It will not be possible for me to discuss all the many topics Landsburg brings up, but I will briefly mention a few more. In chapter 8, Landsburg sympathetically mentions some economists' works that have argued that proliferation of handguns significantly reduces crime rates. In short, "more guns less crime". He then raises the question of whether governments should subsidize gun ownership and engages in an interesting discussion (albeit on a crooked platform) about subsidies and incentives. In chapter 14 Landsburg offers an explanation of his claim that federal aid to victims of the Hurricane Katrina disaster will make life harder for poor people all over the country. In chapter 15 Landsburg discusses matters of life and death. What is the price of a human life? What are society's objectives in saving human lives? These are important issues that are far from being understood. While generally steering clear of moral issues (which belong to a different book by a different author, Landsburg says and I agree), in chapter 14 Landsburg makes one interesting moral claim about protectionism. Protecting American industries against cheap competition is economically wrong, Landsburg claims, and even if it were effective it would be morally wrong.

What Do Firms Want?

Reading the book, one gets the impression that firms and their owners and executives just want to maximize their profits. They will avoid polluting the environment if and only if this is good for business. They will obey the law if and only if the cost/benefit tradeoff in violating the law is unfavorable.

It is not clear if this characterization of what firms want is just an assumption essential for developing the theory (which is reasonable), or an approximation of reality (which also sounds reasonable), or perhaps a solid precise description of reality (which as such sounds unreasonable), or maybe a normative teaching of economic theory (which sounds unfortunate), or perhaps even a representation of moral values (which also sounds unreasonable). This description is simplistic even in the context of classical economic theory, which allows those of us not owning or running a firm to have multiple responsibilities, interests, obligations, considerations, and desires. For some economists who subscribe to this view, responsibilities towards the employees, the consumers, the environment, or the law, which are not derived by the principle of maximizing of profits, are labeled as *charity*. Other economists sharply disagree.

Should We Take Economists' Advice Seriously?

Humble or not, economists do make definite and far-reaching suggestions on how to run things. A December 2007 article in the *New York Times* [4] titled "Ending famine, simply by ignoring experts", describes the story of Malawi, which, against the economic advice of the World Bank, gave subsidies for fertilizers and brought long famine in the country to an end. The logic of the World Bank's two decades of advice against fertilizer subsidies (and against using aid money for such subsidies) is somewhat related to the separation between business and charity that we discussed before.

Here are some quotations from the *Times* article: "Over the past 20 years, the World Bank and some rich nations Malawi depends on for aid have periodically pressed this small, landlocked country to adhere to free market policies and cut back or eliminate fertilizer subsidies, even as the United States and Europe extensively subsidized their own farmers. But after the 2005 harvest, the worst in a decade, Bingu wa Mutharika, Malawi's newly elected president, decided to follow what the West practiced, not what it preached. Stung by the humiliation of pleading for charity, he led the way to reinstating and deepening fertilizer subsidies despite a skeptical reception from the United States and Britain. . . . This year, a nation that has perennially extended a begging bowl to the world is instead feeding its hungry neighbors. It is selling more corn to the World Food Program of the United

Nations than any other country in southern Africa and is exporting hundreds of thousands of tons of corn to Zimbabwe."

So does this story mean that economists' advice is worthless? Not quite. In many cases, following economists' advice was for the better, and there are probably even more cases where defying economists' advice had devastating outcomes.

Economic theory profoundly contributes to our ability to discuss and understand our economic reality and has led to useful insights and sound advice. The role of mathematics and statistics in modern economic theory can make us mathematicians proud (but not blind to the shortcomings of economists and economic theory). We should take economists' advice seriously but be aware of errors and even certain systematic biases.

Summary: Running Against Common Sense, and Other Forms of Skepticism

Challenging common sense is an important part of the scientific endeavor, as is challenging these challenges. Many challenges of common sense are simply *wrong*, but even when insights (from economics or other areas) that run against common sense seem correct, the real challenge is to have them quantified. Giving them too strong an interpretation can be damaging. I do not recommend adopting insights that run against common sense without a clear understanding of their scope and quantitative aspects. Perhaps the best example I have for stretching a surprising correct insight was when my son Hagai was 5 and we told him about evolution. When he next met my mother he asked her: "Grandma, how was it to be a monkey?"

The Flat Earth Riddle Revisited

Insights that run against common sense have little use when their quantitative aspects are not understood. When Landsburg claims that establishing a federal fund for aid to victims of the Katrina disaster will push prices of cheap houses up all over the country, we can ask by how much? 10 percent? 1 percent? 0.1 percent? 0.01 percent? And is this effect larger or smaller than the effect of Katrina itself, which, by a similar logic, pushed prices of cheap houses down?

This brings us to the flat earth riddle. The counterpart of the Pythagorean formula that applies to spherical triangles is just as wonderful as the planar original,

$$\cos(a)\cos(b) = \cos(c).$$

(See, e.g., [5].) So the correct answer is 499.87, and yet the best answer among the four answers above, in my opinion, is a), which uses the flat earth approximation.

A Diversion: Preferring the Common Sense Solution

In the early 1970s Robert J. Aumann, a Hebrew University of Jerusalem mathematician, a recent Nobel laureate in economics, and a visiting professor at the University of California, Berkeley, at the time, was rushed to Washington D.C. to a meeting gathered by John Connelly, the U.S. Treasury Secretary. It was a mistake. The intention was to invite economist Lloyd Ulman. However, hearing that Aumann was working on "general equilibrium theory", Connelly warmly welcomed him to the discussion. "General equilibrium is what we need," Connelly remarked. The gathering was about the high U.S. inflation at that time. To Aumann's surprise, all other participants in the meeting recommended strong administrative measures to fight inflation. When Aumann noted that these "common-sense" recommendations run against "economic logic", as explained in standard textbooks, including those written by the other prominent economists in the discussion, his view was dismissed. These recommendations were adopted and later implemented.

Summary Resumed

More Sex is Safer Sex is a thought-provoking book that I strongly recommend reading. For mathematicians interested in the connection to mathematics I recommend meditating about the models behind the claims, the interpretations, and the larger issues of applications of mathematics.

When it comes to sex, guns, and the future of your country's economy, I recommend applying a lot of common sense.

References

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[2] M. KREMER, Integrating behavioral choice into epidemiological models of the AIDS epidemic, *Quarterly Journal of Economics*, May 1996, pp. 549–573. (The quotation in Landsburg's book refers to an unpublished version titled "Can having fewer partners increase the prevalence of AIDS?" and available on Kremer's homepage.)

[3] MOSES MAIMONIDES (RAMBAM), *Mishne Torah*, 10:1, 7–14, laws of gifts to the poor. (Ample material can be found on the Internet.)

[4] CELIA W. DUGGER, Ending famine simply by ignoring the experts, *New York Times*, December 2, 2007. (The article mentions an economist who supported increased subsidies for fertilizers and also quotes some economists who regard the rains rather than subsidies as the main cause for the 2007 harvest.)

[5] FRANCIS E. SU, et al., Spherical Pythagorean Theorem, *Mudd Math Fun Facts*, `http://www.math.hmc.edu/funfacts`. (Wikipedia's article on the Pythagorean Theorem is also a good source.)