INVESTMENTS & WEALTH MONITOR

A reprinted article from September/October 2020

BOOK DISCUSSION

Laurence B. Siegel Talks about *Fewer, Richer, Greener*

Interviewed by Robert Powell, CFP®

INVESTMENTS & WEALTH INSTITUTE®

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Laurence B. Siegel is the Gary P. Brinson Director of Research at the CFA Institute Research Foundation and an independent consultant, writer, and speaker specializing in investment management. Previously, he was director of research at the Ford Foundation. Siegel is the author of a recently published book, Fewer, Richer, Greener: Prospects for Humanity in an Age of Abundance. *He earned BA and MBA degrees from the University of Chicago.*

Robert Powell, editor-in-chief of the Retirement Management Journal, *spoke with Siegel about his book in early May 2020. An edited transcript of the interview is below; listen to the complete interview at https://soundcloud.com/all-things-retirement/fewer-richer-greener.*

As societies become richer, instead of planning for the next few days, you can start to plan for the next few years. Really rich societies can plan for the next few centuries.

Powell: In your book you make the case that richer means greener. And after a certain level of wealth has been reached, there's a tipping point at which environmental protection becomes a desirable and affordable choice, and society becomes a better steward of its natural surroundings. Do you want to start there?

Siegel: First, environmental protection is always desirable—whether it's achievable and affordable is the variable we need to look at. If you've ever been to Switzerland, which is one of the richest countries in the world, the whole country looks like a national park. You can walk about 20 minutes out of Zurich and be in a beautiful forest surrounded by streams full of clean water, except for whatever bears do in them. However, if you walk the same distance from the capital of a third-world country, you'll find polluted water, polluted air, and all kinds of residue from human activity. Richer societies are greener because as you get richer, your time discount factor, to put it in economic terms, stretches out well into the future.

In poorer societies, you will sacrifice longer-term goals such as a clean environment, or whatever else a society needs to improve itself, in order to secure food and other necessities in the extremely short term.

As societies become richer, instead of planning for the next few days, you can start to plan for the next few years. Really rich societies can plan for the next few centuries. The per-capita income in the United States was about $6,000 or $7,000 when the first national park was founded [in 1872]. It was closer to $10,000 when Teddy Roosevelt expanded the national park system and the forest service into major institutions [in the early 1900s].

We've seen it in Europe, and in Latin America, which is a little farther behind, and in Asia, which has grown so fast that industrial pollution has become a serious problem; it's only just now being addressed by the Chinese government, and at a slower pace by the Indian government. Africa will be improving in the future. This pattern is described by the environmental Kuznets curve.

Powell: Let's go to the Kuznets curve and what you've described in the book as the clean-dirty-clean pattern.

Siegel: Simon Kuznets was a very creative economist.[1] During the Great Depression he was asked to set up a system for figuring out how the economy was doing. Economists were wrestling with things like railroad car loadings, and they had very inadequate data for understanding the Great Depression. He developed a system of accounts called GNP [gross national product], which evolved into GDP [gross domestic product]. He discovered that income inequality went up as a country began to get rich and then went down as it matured into a developed economy.

That's because, in an advanced industrial society, as he understood it, all the

workers were rich by historical standards, and in a primitive society, all the workers were poor and near starvation. It was in between that a few got ahead, and they began to create this new phenomenon called inequality. That explanation isn't entirely up-to-date because inequality has come back. But, in 1991, two economists, Gene Grossman and Alan Krueger, published a paper saying that there's an *environmental* Kuznets curve. A primitive society looks clean, like a beautiful forest. As people advance, they sacrifice the environment to get what they need to survive, and it gets dirty. "Peak dirty" in our own history was about 1890 to 1920, and then we got cleaner because people were willing to pay through taxes and higher consumer prices for a clean environment.

As far as being rich enough for everyone to have a chance of being in the middle class, the United States is not getting richer very fast, but we don't need to. In the poor parts of the world they are getting richer very fast and they do need to.

We bent the curve the wrong way for a while because we didn't have the Clean Air Act and the Clean Water Act until 1970, which was, in my view, 20 to 40 years too late.

Powell: In your book you suggest, like a good economist, that sensible decisions can be made only if you apply a cost-benefit analysis.

Siegel: That's right. Let's say it took $1 trillion to solve the global warming problem. If you had $1 trillion, would you put all of it into that? Or would you build a seawall around Bangladesh? Would you educate a 100 million girls in Africa and the Middle East? Would you try to discover the cure for cancer? These are the kinds of resource allocation problems that economists think about.

Powell: You describe yourself as favoring moderation. I'll read a passage from the book: "I favor moderation, a concerted but not radical effort to achieve environmental improvements in the here and now while growing the global economy to a point where we may not all be rich, but all people will have a better than fighting chance to achieve what we would now call a middle-class existence." How do you achieve good value? Where do you strike that balance?

Siegel: It's a suggestion that we carefully consider trade-offs as an economist would, instead of deciding that one goal, and that goal only, is paramount. Moderation means that if you think there is only one thing that matters, you should think again. Somebody else has a different idea of what matters, and everyone should have a voice. As far as being rich enough for everyone to have a chance of being in the middle class, the United States is not getting richer very fast, but we don't need to. In the poor parts of the world they are getting richer very fast and they do need to. The idea of *everyone* being potentially middle class is not achievable because there are pathological circumstances everywhere. Some people don't have the ability to work and they have to be supported. But in an economy where the whole world now has a per-capita GDP of about $18,000, it's enough to live on. The Chinese are doing it, that's where their number is. And this is unprecedented in world history. The history of the world is the history of a few people doing very well, not literally at the expense of those who are not, but despite the fact that people right around them are not. It's the system of liberal democracy and capitalism that's made this possible.

Powell: You mention that rich countries' peak carbon emissions are turning downward, and that countries with only $7,000 in per-capita GDP begin to reduce particulate-matter air pollution.

Siegel: Sewage is the first emission to get taken care of because we just can't stand it, and particulate matter is pretty bad. The tipping point for particulate matter is low income because, again, people can't breathe and they want somebody in the government to do something. China has reached a point where it's improving, but from a level of very high pollution, and in India the air is even dirtier. India is just getting toward $7,000 right now. I expect that those conditions will improve but not dramatically until maybe 20 years from now, because it takes a long time to change industrial processes. You can tell somebody they're not allowed to pollute, but then all their employees will be out of work and whatever it is they produce won't be in the stores. So these changes take place more slowly than you'd like them to.

Powell: You write that there is no single answer, but economic growth will help a lot.

Siegel: That's most of the answer—that and good government and good laws. A good government is harder to come by than economic growth. Dictatorships and semi-dictatorships have achieved high levels of economic growth that have been sustained for long periods of time. Look at Turkey, look at China. Even Russia is not an economic basket case by any means. Its per-capita income is higher than China's as a matter of fact. But good government seems to be a delicate flower that can be snuffed out by almost anything. Turkey had good government until pretty recently.

Powell: In your book, you talk about something you refer to as de-materialization, or the trend of advanced economies using fewer resources instead of more, doing more with less, and seeking out experiences rather than physical possessions.

Siegel: De-materialization simply means using less material to produce the same or more of what it is you're trying to produce, which is satisfaction or

utility. We've always experienced some of it because the whole idea of economic growth is doing more with less, but the need of people for more stuff has overwhelmed that. So, we're actually doing a lot more with a little more. When the population levels off and you've reached a certain level of affluence, you can actually see the less.

Powell: You suggest that the remedy is not degrowth, but a different kind of growth—an increase in efficiency, fewer inputs being converted into more outputs.

Siegel: We're conducting a natural experiment in degrowth right now [May 2020].[2] GDP is projected to fall 10 percent this quarter—not annualized, but just in one quarter. That's 40 percent annualized. It's not good, and we're going to find out how much we like degrowth when we go to the grocery store and there's nothing there.

Degrowth was one of the dumbest ideas that's ever been circulated in the history of the world. To protect my environment, I'm going to make you all poor and you can live like you did in 1820, where in a good year you can grow a lot of fruit and in a bad year you eat the fruit. And if you have three bad years, which we had from 1812–1815, you have famine and a war.

That's just not the way I intend to live or hope for my kids to live, but it's the way most of humanity has lived for most of time. Economic growth means interdependence. It means that we can specialize and get good enough at something to trade our goods and services for the goods and services of people all over the world.

The secret sauce is good government. And I'm not talking about large intrusive government, but a government that stays out of your way until something goes wrong or threatens to go wrong, and then it keeps you safe. These are the kinds of infrastructure that we in the rich world take for granted, but that you can't take for granted. It's part of the recipe for economic growth. It's not just more, bigger, better toys and factories, it's a system of property rights and trust and enforcement that makes the trust possible.

Powell: I'd like to touch on the notion of urbanism and the virtue of density. In light of COVID-19, I can't imagine anyone saying, "I can't wait to move to New York," given how COVID-19 wreaked havoc in a dense community.

Siegel: Well, they'll move to Minneapolis and Denver and San Diego and San Antonio and Calgary and Manchester, England, instead. Those are still cities. The first industrial revolution wasn't in London, it was in Manchester. In London they were thinking great thoughts, but in Manchester they were building factories. A city doesn't have to be as dense as New York to be extremely productive, but I still think the appeal of New York will endure. They'll get better public health practices, we'll probably get a vaccine or a cure for this disease. Then there will be another disease, and another vaccine or cure.

The value inherent in huge collections of people like New York, Paris, London, Tokyo, or Shanghai is high enough, in the long run, to overcome the threat of disease—especially when we have so many ways of fixing the problem. I'm willing to bet that more people died of homicide in New York between 1970 and 2020 than will ever die of coronavirus in New York. And yet the population of the New York metropolitan area almost doubled in that half century.

Powell: Do you want to talk about nuclear power? What are your favorite subjects in terms of solutions?

Siegel: We have this middle-class world of 7-plus-billion people, but it's going to level off higher between 10 and 11 billion late in this century. We need 5 petawatt-hours of energy. We've got about 1.5 petawatt-hours. So, if we are thinking about getting rid of fossil fuels, we better have another source of energy that is just as abundant or more so, and the only one that actually exists is nuclear energy. The idea that nuclear power is dangerous is just incorrect. The most dangerous kind of power we have experienced in our own lifetime is mining coal, which caused 11,000 deaths of coal miners alone in the 20th century, to say nothing of deaths from air pollution, railroad accidents, people burning coal in their homes and setting the house on fire or filling it up with carbon monoxide.

The safest kind of energy would be something that you can put far away and have it operated by only three people and a dog—a nuclear engineer, a procurement specialist, and a person who does the public relations. The dog is to keep the other two people from bothering the engineer. We're not very far away from having it, but we're a little farther away from having an energy transition. According to experts in energy, it takes 40 to 60 years to transition from coal to oil, oil to natural gas, and so forth. They've all taken about that long. This transition will also take that long. So, we're not going to be able to stop using fossil fuel anytime soon.

But we're already reducing it. The oil price went negative last month. That's not because there's too much oil, it's because there was not enough demand for energy. If you can't drive or fly, because there's nowhere to go, oil still keeps coming out of the ground. There was a storage crisis, which meant that the price went negative. It's positive again, but in real terms, oil is about the price it was in the 1970s. We're not running out of it, but we may not want to burn all the fossil fuels in the world for other reasons. But solar and wind simply don't produce enough energy to get to the 5 petawatts or, probably, to the 1.5.

If you could imagine a world where they do, the whole world would look like a power plant. A wind farm involves

digging out 300 tons of concrete for each wind turbine, schlepping it from the source to the destination, and then putting a several-ton steel device on top of it. All using fossil fuels. When you fully allocate these costs, the environmental payback period for a wind turbine can be as long as 500 years. In 500 years, you won't need it anymore because we will be mining energy from asteroids or something. And the turbine will have long since fallen down. Solar is cheaper, but it doesn't work at night, so you have to build expensive facilities for storage. It doesn't work very well when it's cloudy and it doesn't work over about 40 degrees north latitude, which is where most of the people are, so you have to build expensive facilities for transporting the energy. And solar cells don't last very long, so you have to dispose of them. There are limits to these alternative energies. We need to develop them better, but they're not a panacea.

Powell: In your book you say, "renouncing nuclear power just when we need it the most is almost too much for me to bear." That's among your strongest statements in the book.

Siegel: Well, civilizations do commit suicide. It is a choice, but I just don't think it's a very good idea. The other path is to keep using fossil fuels and hope that the Earth doesn't get much warmer and that the effect is asymptotic to some number that's tolerable. I have always believed in magic, but I do ask the magician to show me the trick at the end of the show. Hoping for a magical end to global warming is not a strategy. We have to adapt to it as well as try to mitigate it.

Powell: Let's turn to bioengineering and geoengineering.

Siegel: Bioengineering and geoengineering are two fancy ways of saying we alter our environment to favor ourselves the same way that worms do. They take a pile of rocks and turn it into fertile soil. Every animal, plant, and microbe engages in some form of bioengineering and geoengineering, but we've gotten really good at the first one. Bioengineering now really means genetic engineering. We've always genetically engineered everything we come into contact with. Corn, for example, has its genetic origins in an inedible grass called teosinte that the Central American farmers somehow recognized could be genetically modified through crossbreeding and hybridization over the centuries into a delicious vegetable. Without knowing it, we have actually genetically engineered bacteria that live in our gut to adapt to a very weird diet of cooked plants and cooked animals.

No other creature on this Earth eats any of that stuff, they have different bugs, right? We've bioengineered a whole flora, that's what doctors call it, of bugs in our system. Can we do this faster and better and more effectively by knowing how to read the DNA code and use techniques like CRISPR, which is a genetic engineering tool? Sure, of course we can. In the past 75 years, we've made food yields radically higher with the old ways of modifying plant and animal genomes, and we may make more progress with these new tools.

We may be reaching the limit of what we can achieve without genetic engineering. We may be able to engineer people—I'm a little nervous about that because of unforeseen side effects. But, somebody in China has been born without the gene that causes AIDS if it's defective; with the gene entirely removed, they are immune to AIDS. I'm not a biologist, but I think that if used responsibly, this is a way of getting better foods, better medications, better clothes. I'm wearing a cotton shirt. You think that cotton's natural? Of course, it grows on trees, or something a little smaller than a tree. It's "natural." But those plants came from thousands of years of Egyptians or some Georgia Sea Islanders messing with the plants until they got a cotton that would make a comfortable shirt. So, I'm very optimistic about that. Geoengineering is harder because you can do a controlled experiment with a plant or an animal or a bacterium or a virus. You can't do a controlled experiment with the planet and say, well, we'd like to make the tropics a little cooler and the Arctic warmer, have more fresh water where the people are, because all of it is wasted being up in northern Russia.

The silliest idea I've heard, which unfortunately I have to attribute to the brilliant polymath Stewart Brand,[4] is putting reflectors in space to deflect sunlight away from the Earth. It would take a trillion of them. Each one would be about the size of a butterfly and it would have to be in orbit around the Sun, between the Earth and the Sun, and stay in one place, this swarm of a trillion fake butterflies.

But certainly geoengineering is already being done with devices that take carbon dioxide out of the atmosphere and convert it back to hard carbon, which could be buried or used as a fuel again, or used for something else. Close to the end of my book I talk about some trees in Boston that were a demonstration project of an artificial tree, sort of like a fake Christmas tree, that converts carbon dioxide to carbon a thousand times as efficiently as a real tree.

You'd have to plant a lot of these things and they don't grow by themselves; you'd have to make them in a factory somewhere. This is a little far out, but the computer was a little far out when I was born, and now everybody owns at least three of them.

Powell: What are your thoughts about the coronavirus pandemic and its effect on the environment? We've heard all these stories about people seeing the Himalayan mountains for the first time in years, flamingos coming back to their habitats where they haven't been to in years, such as Mexico City, and on and on.

Siegel: Well, we're conducting a natural experiment in going back to the

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pre-industrial age and we're going to have the same problems we had in the pre-industrial age if we continue the experiment indefinitely; we'll have no food, no medicine, no transportation, no communication. But the view of the Himalayas will be spectular. You choose.

So, as I said earlier, civilizations do commit suicide; I'm just not volunteering for that assignment. I saw Michigan from the beach in my town in Illinois for the first time in years the day before yesterday, but I would rather not see Michigan. I would rather be able to support 7.8 billion people in the world in modest comfort—at the very least, 91 percent of them in something other than extreme poverty. I would rather have the transportation, the communication, the books, the music, the movies, the idea that you have choices in life. You don't have to be a farmer, like your great-great-grandfather.

And part of the price we pay is a certain amount of environmental damage. You can't have everything; that's what economics tells you. You can have almost anything you want if you're willing to sacrifice everything else, but you can't have everything at once. There are trade-offs and that's the most important lesson. We've already figured out how to control environmental damage to a very satisfactory but not perfect degree. It will get better, but it won't become perfect. The COVID shutdown is easy if you've got a lot of money; you just have people bring you stuff. But if you're one of the 80 million people in India who lives by collecting garbage and selling it that day for food, you're not going to appreciate being told to stay in your hovel and not work, because then you won't eat. Not allowing people to work is about the cruelest punishment there is for something they didn't do.

Powell: Thanks very much for this insightful discussion.

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ENDNOTES

1. Simon Kuznets (1901–1985) was an American economist and statistician who received the 1971 Nobel Memorial Prize in Economic Sciences "for his empirically founded interpretation of economic growth which has led to new and deepened insight into the economic and social structure and process of development."
2. Degrowth is a term used for both a political, economic, and social movement and a set of theories that rejects the desirability of economic growth. It is based on ideas from a diverse range of lines of thought such as political ecology, ecological economics, and environmental justice. en.wikipedia.org/wiki/Degrowth.
3. A petawatt-hour (PWh) is equal to an energy flux of one quadrillion (10^{15}) watts per hour. The largest dam in the world, the Three Gorges Dam in China, produces 0.22 PWh. The largest nuclear plant, Kashiwazaki-Kariwa in Japan, produces 0.08 PWh. Five PWh would require 62 of those largest-size nuclear plants.
4. Stewart Brand (1938–) is an American writer, best known as editor of the *Whole Earth Catalog*. He founded a number of organizations, including The WELL, the Global Business Network, and the Long Now Foundation. He is the author of several books, most recently *Whole Earth Discipline: An Ecopragmatist Manifesto*.

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