

Mass Media Coverage Professor J. Scott Armstrong

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Forecaster Charges It's Much Overrated

When J. Scott Armstrong first studied economics, he was thoroughly seduced by all the accepted theories and conventional wisdoms of forecasting. It was only when he did a series of automotive sales forecasts – and discovered that his simple forecasting model was just as accurate as his more complex model – that he started to rethink forecasting theory.

Armstrong, now an associate professor at Penn's Wharton School, has been rethinking forecasting theory in the decade since then.

The result is a book, *Long-Range Forecasting – From Crystal Ball to Computer*, recently published by John May & Sons Inc, in which Armstrong both explains what forecasting is all about and takes some jabs at his colleagues.

Two of his hardest shots: That econometric forecasting is a useful discipline that to being applied in useless ways, and that experts are often no better at forecasting than the average intelligent person, although they are often more expensive. Armstrong, 41, holds a Ph. D. in management from Massachusetts Institute of Technology. He has taught at both M.I.T. and the Stockholm School of Economics, and has served as a consultant on forecasting and other management operations for organizations ranging from AT&T to the Urban Coalition of Philadelphia.

He is promoting the book – his first – through the sale of T-shirts with the title stenciled on them.

His puckish sense of humor first shows in his introduction to the book, which contains his own forecast, made in 1969, that he would finish the book in 1970 – an error of about seven years. Armstrong was interviewed by Andrea Knox of *The Inquirer*.

Q: Why do you say that econometric forecasting is not being used properly?

A: If you had to prove efficacy in forecasts, the econometric forecasters would probably be out of business. They are superior to other methods in long-range forecasting, but they have been misused for short-term forecasting. A group of businessmen making predictions about the economy will do as well as an econometric forecast.

Q: How do you define short-term and long-term?

A: For most businesses one or two years is short-range, and five years and above is usually long-range. This varies – long-range in a fast changing business like digital watches would be much less than five years.

Q: But why shouldn't the econometric forecast be more accurate, even to the short run? Doesn't it have the advantage of being able to incorporate more data than other methods?

A: It doesn't help to have more data. Complexity doesn't increase accuracy, at least in the short term. When people have compared the accuracy of econometric methods with other methods, they found no difference in the accuracy of the forecast.

And that's what I found when I did my study of the automotive industry for a course in econometrics I was taking at M.I.T. I developed a complex model, with about half a dozen variables, for predicting sales. And then I found I could cut it down to just a few variables and get the same results.

Q: It must be important to get the right variables.

A: Yes. There are two things that are important in creating an econometric model. One is to pick the important variables, and you can usually rely on standard economic theory for that – things like prices, population. The other thing is to tell the direction of the relationship, for example, that sales fall as prices rise. It's really important to know this.

Q: Why is it that complexity doesn't increase the accuracy of forecasts?

A: I can't say for sure, I can only speculate. I think one reason might be that the size of measurement errors is probably large relative to the time changes taking place. It's difficult to measure things like the unemployment rate, or GNP. But I'd rather talk about the things I know about, not the things where I'm just guessing.

Q: So what's the best method of making a short-term forecast?

A: The judgmental method. The one where the expert economist tells you what is going to happen.

Q: Why?

A: Because he has all the latest information. He knows of errors in the data, for example, and that information can be valuable.

Q: So why do people use econometrics for short-range forecasting?

A: I call it the seersucker complex. For every seer, there is a sacker. People love complexity – it is a different version of the medicine man. People want the magic formula. We went into one company that was using a planning and forecasting model, and we couldn't find anyone in the company who admitted he knew how the model worked. They were relying on an outside expert.

Q: Why is the econometric method better for long-range forecasting? Wouldn't the errors it makes in short-range forecasting be magnified as it predicts over a longer span of time?

A: Experts tend to be good at seeing how things are now, but bad at seeing how things will be. They tend to be optimistic, and they tend to be conservative. You get around these things by using the computer. The computer suffers a bit because its data may be a little older, and of course its data will contain the bias of the person who selected them, but basically the computer will process information better than a person. It will apply the person's rule better than the person himself, because it's more consistent. It doesn't get tired or irritable, and it doesn't have prejudices beyond what you put in there.

Q: What other forecasting methods do you discuss in your book?

A: Bootstrapping, extrapolation and segmentation.

Q: What's bootstrapping?

A: It's the objective form of judgmental forecasting. That's where you take a committee's predictions of who will do well in a graduate program and use them to create a computer model. The computer model will use the committee's own guidelines and do the job better than the committee.

Q: And extrapolation?

A: Plotting the future from historical data. It can be as simple as extending a line on a graph, or as complicated as the Box-Jenkins method. Box-Jenkins is so complex that I don't have a good understanding of it, but it's not much more accurate than plotting a continued curve.

Q: And segmentation?

A: That's using econometric analysis, but in a more complicated way. You break a category like air travelers into segments on the basis of things like age, purpose of travel, sex, income. Then you predict the future activities of each group and put them together to determine the future of air travel as a whole.

Q: Doesn't that fly in the face of your theory that simplicity is best?

A: In long-term forecasting, you can tolerate a bit more complexity than in short-term, although you probably hit a point where the value of complexity drops off. There's been little testing of segmentation as a forecasting method.

Q: Why should a reader of *The Inquirer* be interested in all this?

A: My advice to a small stockholder would be, don't worry about it. But a businessman should be interested, because there are a lot of things he can do to improve his long-range forecasting.

Q: Like what?

A: He usually does his forecasting in a meeting where there are no rules, so often one person dominates. This is less a forecast than an opinion. He can structure it so everyone has equal weight, or better yet, he can have everyone fill out a form with his own forecast and he can compile them. This takes less time than a meeting and is more accurate, although it wouldn't satisfy the social needs for having meetings.

Another thing – there's almost always safety in numbers. If he usually does his forecasting alone, he can find someone else in the field and get his forecast, and then average the two. That will improve his forecasting.

And he shouldn't spend a lot of money for experts, because they are often not worth it.
