

Singapore Management University

Institutional Knowledge at Singapore Management University

Perspectives@SMU

Centre for Management Practice

9-2013

Making sense of trends and data

Singapore Management University

Follow this and additional works at: <https://ink.library.smu.edu.sg/pers>



Part of the [Categorical Data Analysis Commons](#), and the [Databases and Information Systems Commons](#)

Citation

Singapore Management University. Making sense of trends and data. (2013).

Available at: <https://ink.library.smu.edu.sg/pers/286>

This Journal Article is brought to you for free and open access by the Centre for Management Practice at Institutional Knowledge at Singapore Management University. It has been accepted for inclusion in Perspectives@SMU by an authorized administrator of Institutional Knowledge at Singapore Management University. For more information, please email cherylids@smu.edu.sg.

MAKING SENSE OF TRENDS AND DATA

Published:

25 Sep 2013



How do you make sense of data when it is all unpredictable?

“No one really understands trends but everyone sees one in a cloud of data,” proclaims **Peter Phillips**, Distinguished Term Professor of Economics at Singapore Management University. “Humans see trends because they see order in disorder. It reflects the need to see order.”

Speaking at a recent SMU SKBI public lecture *Exploring the mysteries of trend*, Phillips explained how this need for order has propelled governments and other institutions to dissect data in areas such as crime, financial markets, and population demographics.

“Governments, industry, and policy makers employ statistical agencies to assist them in analysing data to aid policy making,” Phillips told *Perspectives@SMU*. “This is now a very well-established procedure. The difficulty is that our data are not stationary. That is, they don’t fluctuate about at a particular level in the same way over time.”

STATIONARY AND NON-STATIONARY DATA

Stationary data, Phillips explains, are things like “the waves that beat on a shore, the mechanism that drives the waves, the winds and the tides and the currents. These things essentially stay at pretty much the same with some variation. And it’s much easier to analyze data of that type.”

An example of how the study of such data is applied is the Aswan Dam in Egypt, which was raised twice before being supplemented by the new Aswan High Dam. The latter was built after Harold Edwin Hurst, the hydrological consultant who was tasked to predict how much the Nile River flooded each year, took into account historical records of flood heights and ran them through robust statistical calculations.

“The example of building the Aswan Dam and the recognition of the importance of long memory is a very important one,” Phillips asserts, mentioning the *Long Memory* statistical technique that

was developed by Hurst. “Once you’ve realised that there is substantial long memory in tidal systems or flood lines and so on, then you can recognise that depending on the length of time that the project that you’re considering constructing is supposed to last, you have to take into account a range of factors that are relevant in that time period. That could be either a hundred-year flood line or a thousand-year flood line and those lines may be substantially different because of the memory characteristics of the data.”

Such empirical solutions are the desired outcomes of econometrics, which in this case Phillips describes as the “vehicle with which we understand trends”. It is, however, a tall order because a lot of what policy and decision makers have to deal with involves man-made and non-stationary data.

“Typically in human-driven data, because of the fact that our institutions are man-created, means that the data itself is endogenous; that is, we have a major role that we play in determining the outcomes. And therefore dealing with that endogeneity is extraordinarily difficult in empirical research. “

Phillips adds, “The other aspect of econometrics that is really important is that most of the data that we look at in finance and financial economics tends to be non-stationary in the sense that it wanders away from a particular level. It’s forever wandering away from that particular level. That means there are so many more degrees of freedom in the data, and therefore much more difficult for policymakers to enact policies that were taken into account what will happen over the next policy period which may be anything from one year to five years ahead.”

WHAT DO WE DO?

It is therefore difficult for traffic authorities to plan for smoother rush hour traffic, and next-to-impossible for financial regulators to prevent the next stock market crash. Do you, therefore, do nothing?

“There is no other alternative,” Phillips says. “The alternative is to run a line through a set of points based on unwarranted assumptions and have a foregone conclusion about where we’re going. That’s the most primitive way to proceed. One can also do nothing.”

“What we can do with the methods that are currently available to us is to use past data to learn something about the features of the generating mechanism [and] learn something about that and the memory characteristics in the data in order to improve our capacity to frame policy in the future about the zones that the data may visit in the future.”

In other words, keep working at it.