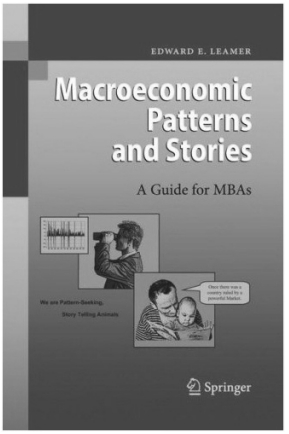

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Macroeconomic Patterns and Stories

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What would you do if you had to teach a new course and, in the evaluation at the end, you found out that the students did not like it? Most people would blame it on the students' lack of interest – well, especially in the case of MBA students in business school – and would continue with the concept they had originally chosen. Some would change the concept for the following year and try again. But what if the students still did not like your course? I guess only a few would continue changing the course. Does it pay to do so? Well, in Leamer's case, it did. After a few years he won the prize for the best taught course (in his department?), and a couple of years later, wrote this book. This is an exceptional book and I wish I could have had it 40 years ago, when I first studied macro-economics. Modern macroeconomics is full of theory and mathematics, as most people know from the battery of citations and user statistics in illustrative boxes and appendices. Not so Leamer's book, which makes it even more interesting to students of modern economics. He does not start from a reference to literature, he starts from an empirical question: given the most recent quarterly data in the US since 1950, can we explain observed business cycles and make reasonable forecasts? Thus, the approach is purely empirical and uses statistical reasoning and arguments to explain most of the macro-economic indicators. It can be classed as an econometric book, but in contrast to the prevailing practice of econometrics, Leamer does not start from theory but rather, explains economic reasoning using graphs and simple data displays. No one has yet tried to write a similar book. Leamer's approach is refreshing, as it offers a new look at the complex system called the economy.

Dividex: A useful prescription?

In order to control vast areas, the ancient Romans recommended "Divide et impera" (divide and rule). Leamer's empirical advice for structuring empirical macroeconomics is "divide et narrate" or "divide and tell", to which I prefer "Divide et explica" (divide and explain), or the "dividex" approach. The art of forecasting is to get the right part/chunk of

data for which you can tell a convincing story. Why? Because: "We are pattern-seeking, story-telling animals". Is this dividex approach successful and promising? Well, it depends on your expectations from scientific explanations. Some people say that standards in the social sciences are less rigorous than in the natural sciences. So finding a good story will satisfy the expectations of many people, and students love it. But how do we decide if a story is good? Traditional macroeconomists start their stories from a theory. Armed with a research question and the prevailing theory (paradigm), they derive a model which is handed over to the econometrician who looks for data and a statistical procedure that will decide for or against the null-hypothesis that represents the research question. In a parallel paper, Leamer (2007) explains his uneasiness with the current practice of explaining economics (too theory heavy) and his motivation for finding a new position:

"Story and pattern telling" and "divide and explica" or "dissect and explain".

In the beginning, there was a story. If not, we tell a story. We all are brought up that way. In science, we would like to say: in the beginning there was a question, a thought, a theory. Evolution created patterns out of chaos. Thus, the longing to see structures and patterns in a hostile environment of randomness (or chaos) is rooted in the very old desire to throw new light on "theory and evidence". If God created the laws of the universe, we have to find out what he did. But how? Clearly, this can be done by trial and error: a theory is invented, and then, as we develop consequences from the theory, we check them out in observable reality. If the observations are in agreement, then the theory is correct; if not, we reject the theory. This presupposes that a fact is recognized by everyone as a fact. If not, these empiric methods of "theory and evidence" do not work. But facts can be the Achilles' heel of ambitious theories that are subject to screening by "theory and evidence".

PSST as a driver for understanding

The problematic concept of Leamer's book – at least for my taste – is "storytelling". It might describe the present situation in macroeconomics to some degree, but does it do so with tongue in cheek? First of all, many readers expect honest answers from scientists, answers that can be traced back using a logical sequence of arguments. Thus, scientists should devote their time to the search for truth. Is the quest for storytelling the right tool for this search for truth? Leamer claims that the title of his book was inspired by a comment he heard on the radio: "We are pattern-seeking and story-telling animals" (call it the PSST hypothesis). The PSST hypothesis implies that scientific explanations of macroeconomics can be summarized by finding patterns (in the data) and telling convincing stories. Story-telling implies that (economists or similar large animals) have no idea what is going on. Does storytelling imply that everyone can tell his own story? Probably. Again, evolution comes into play: people prefer not to hear all stories, so certain stories get selected. But is this a good way of improving one's knowledge? Otherwise, how can we find out what is a good story and what is a bad story? This question needs to be answered if we are to follow Leamer's route of "pattern tales" and love of "pattern seeking". If economics consists of storytelling, how can we make progress? Evolutionarily speaking, storytelling was a great

engine for the storing of knowledge and tradition, even after writing was invented, mainly because concepts can be better understood by telling stories than by promoting abstract concepts. Logical reasoning is a Cartesian heritage of modern science, and is connected with an implicit competition criterion: those theories that make better, and rather unexpected predictions that turn out to be correct (or non-refutable), are preferred. But what about empirical phenomena where no theory exists, or where related facts are in search of a theory? Then we make a first try and, following Popper, maintain that we consider only those theories as scientific, which make predictions that can be falsified. However, this classification can only be done stochastically and might not apply for all statistical phenomena in our life. Leamer also doubts that conventional statistics is a good tool for progress in economics. But if statistics is not used in the social sciences, what else can we use? Can we really say that a good economist is someone who tells good stories instead of providing econometric evidence? Moreover, I doubt that all students want to hear about storytelling as a primary source of science. What, then, would be a fair solution to satisfy scientific desires?

PSST: Beyond theory and evidence

I guess what Leamer is aiming for, by promoting PSTT, is to close the gap between economic theory and empirical evidence. Because economics does not provide clear answers or criteria as to what constitutes a good theory or a good empirical result? We have all seen situations where the empirical evidence is weak and contradicts the theory. And we don't know if it is a weakness of the theory or the "bad mood of the economic reality", i.e. the impossibility of observing the data we want. Furthermore, what Leamer has in mind is the fact that we have a lot of anecdotal evidence in economics. This leads to the next challenging question: can anecdotal evidence of whatever quantity lead to a useful "theory", or to good advice for policy making, or to useful forecasting models? If your answer is yes, then you have to outline your approach. This demands that you reveal the secret source of wisdom/philosopher's stone with which you are able to separate the good from the bad empirical evidence, thus predicting which data will lead to good or bad models, avoid bad forecasts, and finally, discriminate convincing from unconvincing theories. So I would make a difference between storytelling and anecdotal evidence. Anecdotal evidence provides good stepping stones in the direction of a theory, which could be right or wrong. But some anecdotal evidence produces better stories than others. If that is in accordance with your view of the world, then I would suggest the following: insert "reading boxes" for each section of your papers where you think you have found good stories.

Evidence and PSST

Economic patterns also seem to be hard to find, because we humans constantly interfere with economic processes, and such behaviour leads in the long run to the destruction or disruption of any regularities. Thus, if we are really pattern-seeking creatures because we

cannot cope with randomness, we will always tend to overestimate the slightest findings of economic regularities. I personally don't know of any stable economic patterns, because evolution is inherently non-stationary. Like history, economic history cannot repeat itself. But are there any convincing historic patterns? If economics is different from history, how is it different? To reformulate this sentence, as its meaning is unclear: if we talk about history then do we reflect past evidence on the current, present view and language of our society, and is it the same in economics? Business cycles are pattern seeking! A cycle is a popular pattern and a significant metaphor in economics. Can cycles really exist when the underlying decision making criteria are constantly changing, and even the way we think about certain "facts" is changing all the time? A startling observation is that people don't observe all facts equally. On the contrary, they are fact pickers and ignore evidence they don't want to see. But still we think that most of us are rational decision makers. . . Maybe some are more rational than others, but will more of an appeal to rationality make observed economics easier to understand? Will they lead to more patterns and stories, or to fewer? It would also be good if Leamer were to tell the reader how hard evidence can be found, and for what models. To clarify: what are the facts that contradict the models in use. It seems that for many problems we have not found the right economic framework for conclusive economic reasoning. It could be that the success of economic reasoning depends on many more conditions than we are aware of today. Thus it might be almost impossible to say that a certain theory is wrong or false just by looking at the data alone, because we don't know all the necessary pre- and side (?) conditions. So what does a reader or a student expect? First of all, they want to know which models (in theory and practice) are currently accepted, and which are controversial. They also want to know which models are good for forecasting, if recommended models are indeed in accordance with some theory and why. They might also want to know what questions are open problems and to get ideas for lines of inquiry for their own research.

Judging new theories

According to Pähler (1986) there are 4 criteria to judge the content of new theories: (1) Prediction of new facts, (2) Explanation of hitherto unexplained facts, (3) Alternative explanation of known facts, (4) A re-interpretation of the explanandum.
Popper's "heroic science" is a theory that satisfies all 4 criteria. Note that this classification implies that the question as to whether the criteria are fulfilled can be made in a fair way. Now, a better approach in terms of the above criteria is, has knowledge been increased by this new theory? Clearly, pattern-seeking will not fulfill all 4 criteria, and storytelling is also not covered. According to these criteria, the entertainment value of a theory is not important. But it seems that pattern and stories are good advice for education, where the goal is "economic thinking". This touches upon another important subject: how can we find regularities for an economic behavior that is inherently non-stationary, i.e. where the assumption that certain characteristics will repeat always in the same way, is unrealistic or is rather the exception? The other problem is that experiments in behavioral sciences are rather impossible to make, or as Leamer has stated it for a long time: how can we

make causal inference in a non-experimental science? As we all know, nobody has given a satisfactory answer so far, and surprisingly, scientists and economists are very short on answers to this question. In my student years we were critical of any assumptions, but only once, in a statistical seminar did we touch upon the question of how to make inference and inductive inference from historical data.

Dissecting non-stationary evidence

Leamer's implicit advice, to analyze non-stationary data by repeated sub-divisions, makes sense. In this way we can expect local similar regularities. Like an integrated process that has a changing mean as a long-run behavior, you don't notice that if you just look at a short window. This also shows that asymptotic behavior of estimators is not a primary goal if you analyze inherent non-stationary data like economic data. The only rationale we lack is the demand for storytelling. The argument that people like to hear stories is a little bit short. Can we come up with a better rationale? How about this: storytelling improves the imagination, the ability to ask creative questions and facilitates the ability to check whether you have made progress in knowledge accumulation and understanding. It also raises the old question of normative vs. descriptive knowledge production: in the beginning was the model, and then the task in empiricism is to prove or disprove the theory by making fallible predictions. Or: in the beginning there were observations, hopefully more of them, and then the task of the scientist is to create a theory that explains the observations. In both cases, success is measured by the ability to make a prediction of the next observation. Mainstream macroeconomics follows the first top-down approach, with the risk that many tiny often irrelevant models are developed. Leamer clearly favors the bottom-up approach: let the data speak, but education in macroeconomics gives you the language to frame the right questions. On a priori grounds it is difficult to judge what approach is more promising. What is clearly missing is a theory as to how to discriminate between rival models. Maybe this is a futile task that will never be completed. Both approaches rely on the assumption that people want to learn from data, and that the perception of data is an objective wish and equal ability of all men. This is a typical assumption of enlightenment. I guess what is more appropriate is the observation that people like to follow illusions, like to be deceived and do not want to accept all facts as facts and like to ignore 'the unthinkable'. Thus, model space and data range is perceived in a very limited fashion and on top of this, the subjective span of variation is enormous.

Summary

Let's have a look at the main parts of the book. After the Introduction, Part II ("Four Key Variables: Growth, Unemployment, Inflation and Interest Rates") explains the key macroeconomic variables for the US in separate chapters. Part III comes in 4 subparts where the first one, on "Recession Symptoms", explains the concept of idleness and key indicators of recessions. In a sub-part, "Recession Stories" deals with unemployment and the concept of

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"accelerators" during the business cycle, based on the concept of abnormal contributions of growth. In a sub-part of "Recession Early Warning Signs", Leamer explores possible leading indicators. This part contains the central chapter on growth contributions (with references to look up the formula at BEA[1]) because deviations from the non-linear trend of growth contributions to GDP defines the variable "abnormal growth contributions". This variable seems to be a good indicator to predict turning points in a business cycle. In the last sub-part of "Recession Causes" we are confronted with the problems of making inference with non-experimental data. In Part IV "Expansions: With and Without Spurts" we are shown that a cycle can have intermediate phases of growth between the major turning points, called sputters and spurts. The final Part V "The Longer Run" describes further macro-economic variables that change over the cycle.

The book has some minor drawbacks. While the figures by chapters are available on Leamer's homepage, there is no software that supports the approach. Also, all the chapters of the book can be downloaded separately via the Internet.[2] Some R programs I have written while I read the book. The structure of the chapter is suited for an MBA course but could be improved to present the results in a more compact way. The chapters are quite heterogeneous in size and contents. A summary of the findings at the end of a chapter would be useful. Exercises can be found on the homepage of Edward Leamer. Nevertheless, the book is impressive to read if you enjoy a fresh look at macro-economics. Or to answer the question of how business people perceive economic development in the US and evaluate their future business, and whether they look at tons of figures, e.g. in the Wall street journal. People with a strong theoretical background will easily be bored by the flood of empirical facts. On top of all is the quite personal writing style of E. Leamer. Sometime it seems that we are thrown back into our own classroom experiences. "Did you get that?" The style certainly adds to the easy reading of the book and the impression that you learn something new about the current behavior in economics. It remains to be seen if the scientific community or students pick up on this approach. The book might be used as supplement in teaching courses in business forecasting with the focus on the US economy. It will be difficult to transfer the findings and approaches to other countries, as it was my experience in Polasek (2009).

[1] The formula for computing contributions to growth is:
$C\%\Delta_{i,t} = 100 \frac{\left(\frac{p_{i,t}}{P_t^F} + p_{i,t-1}\right)\left(q_{i,t} - q_{i,t-1}\right)}{\sum_j \left(\frac{p_{j,t}}{P_t^F} + p_{j,t-1}\right) q_{j,t-1}}$, where P_t^F is the Fischer price index for aggregate in period t relative to period $t-1$; $p_{i,t}$ is the price of component i in period t; and $q_{i,t}$ is the quantity of component i in period t.

[2] See http://www.springerlink.com/content/978-3-540-46388-7.

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